

OCT 6 1924

AUTOMOTIVE INDUSTRIES

The AUTOMOBILE

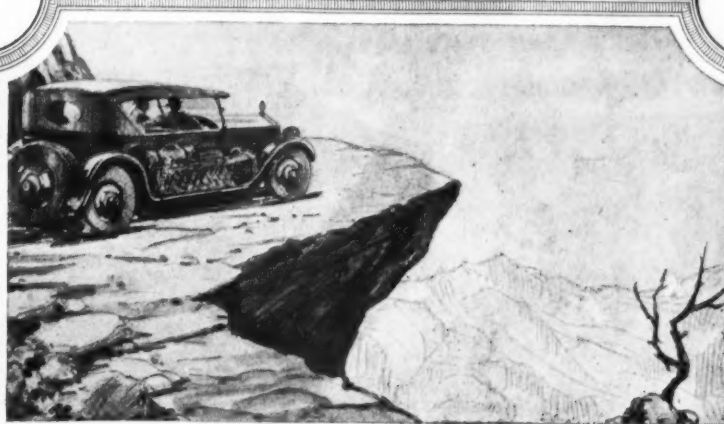
Vol. 51
Number 14

PUBLISHED WEEKLY AT 239 WEST 39th STREET
NEW YORK, OCTOBER 2, 1924

35c. a copy
\$3.00 a year

ATWATER KENT

Makers of
THE WORLD'S HIGHEST GRADE IGNITION
STARTING AND LIGHTING



NO MORE definite expression of the public's confidence in ATWATER KENT Electrical Equipment can be found, than the question so often asked by prospective car owners — "Is it Atwater Kent Equipped?"

ATWATER KENT MANUFACTURING COMPANY
4739 VISSAHICKON AVENUE, PHILADELPHIA

A new era is here

There is now no excuse for a modern gasoline engine to knock when using ordinary gasoline. It is the Ricardo Head that makes this possible

WAUKESHA MOTOR COMPANY

ENGINE BUILDERS

WAUKESHA WISCONSIN
NEW YORK CITY



*An inside view of one
type of Ricardo Head*

The
Ricardo Head

AUTOMOTIVE INDUSTRIES

The AUTOMOBILE

Vol. 51

NEW YORK—THURSDAY, OCTOBER 2, 1924

No. 14

Dull Finishes Gaining in Favor, Closed Car Exhibit Shows

Number of one-piece windshields increases, more decorative visors become popular, and more grays and greens for body colors are used. Small crowds attend opening sessions.

By Herbert Chase

GREAT increase in the number of semi-lustrous satin finishes, introduction of several new one-piece windshields, trend toward use of greens and grays for body colors, more nickel parts, and more decorative visors are among the important body design trends brought to light at the Closed Car Show of the New York Automobile Merchants Association which opened at the Grand Central Palace on Sept. 27, and which will close Oct. 4.

Particular interest attaches to this exhibit because it brings together for the first time this year all of the new closed body models and affords an excellent opportunity to analyze and compare the new constructions. A number of models made their first public appearance at this show, including new body types brought out by Chandler, Chrysler, Willys-Knight, Apperson, Marmon, Flint, Gray, Hupmobile, Rickenbacker, Lexington, Maxwell, Oldsmobile and Stearns-Knight.

Small crowds attended the opening sessions, but a good proportion of those who did go seemed to have a practical interest in the exhibits. Representatives at the various booths were fairly well satisfied with the business done on Saturday afternoon and Saturday evening, but most of them were hoping for larger crowds before the end of the show.

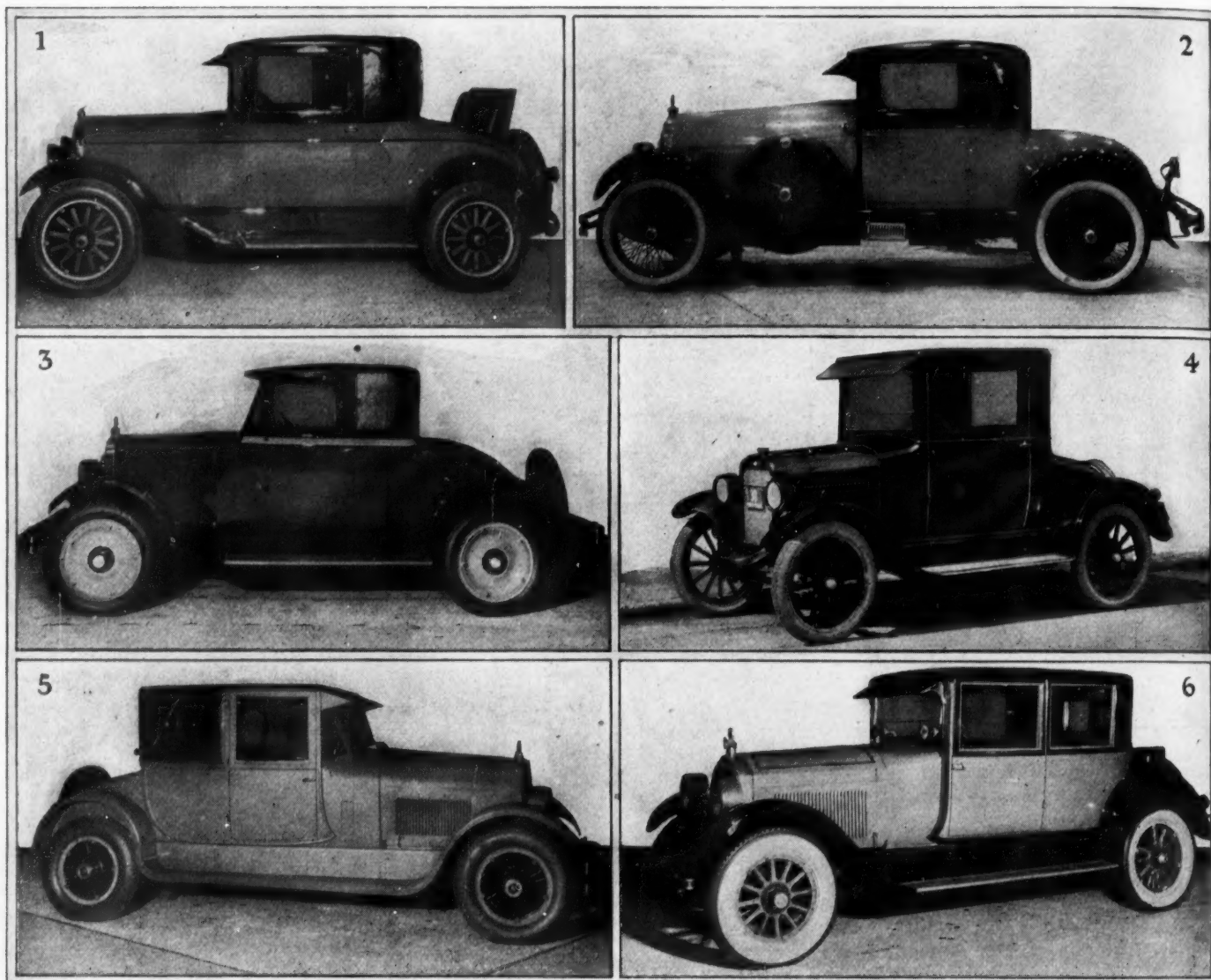
A large proportion of the important cars were represented, although Chevrolet was among the absentees. The show included some ten or twelve truck exhibits in addition to the passenger car booths, so that two floors of the Palace were fairly well filled. The displays were attractive, while the knowledge of the salesmen was about the same as usual.

Less glossy pyroxylin type finishes are catching on! There are more at this show than at any earlier exhibit and there is every evidence that they are liked. A large percentage of exhibitors have at least one car with a pyroxylin finish while some makers are using this finish exclusively. Apparently the user is beginning to appreciate the advantage from a service standpoint of a finish which is hard to scratch and is easily cleaned. In any case, such a finish is certain to have an extensive trial for it is used on cars in all price classes and by both large and small producers.

STUDEBAKER has one model in this finish, Buick and Hupmobile show several. Moon uses a nitro-cellulose finish exclusively while other makers who show at least one job so finished include Jewett, Chandler, Marmon, Case, Franklin and others. Oakland is using it for the second year.

Glossy finishes are in evidence, however. They probably outnumber the dull or satin finish jobs and a number of makers still employ glossy varnish exclusively for standard work, but some furnish nitro-cellulose finish jobs on special order.

Colors also are changing. There are more greens and grays than usual during the last two years, while maroon is much less in evidence. A great many blues still are seen, but they run more to the Copenhagen and marine shades than last year. Black cars are much less prominent although they are shown by several of the large manufacturers, especially on the large production models. On the other hand there are a minimum of the very bright and showy colors—



1—Chrysler coupe with folding dickey seat in rear deck. 2—Kissel sport coupe, one of the few jobs in which steps are used in place of running boards. Golf bags can be strapped easily to rear step and fender. 3—One of the distinctive Rollin coupes. Note high belt line and shallow superstructure with narrow colored panel between. 4—Overland steel-bodied business coupe, trimmed in spanish grain leather. Door is extra wide, so that no window is needed in rear quarter. 5—A smart Marmon coupe finished in gray pyroxylin with black leather covered quarter panel around which is a narrow aluminum and leather molding. 6—Stearns coupe finished in two tones of brown. Note visor and panel on hood

those which are in evidence being chiefly if not entirely special paint jobs.

Superstructures finished in black are dominant as always, but a few makers have achieved a degree of individuality by painting the superstructure in some color or shade which harmonizes with the body or affords a contrast which is pleasing. In some cases disk wheels, which are more in evidence than ever, are finished to match the body or to match the superstructure, while occasionally they are painted in a pleasing contrast to other parts. Wood wheels still are used on a great many models and of these a number have the natural wood finish. One Lexington model was shown with Smith cast metal wheels.

Several makers, among them Jordan, Stearns, Chrysler, Cadillac, Pierce-Arrow and Cleveland, have taken some steps to relieve the severity of a plain hood by providing an embossed molding, usually a continuation of the belt line, or a break in the hood contour. On a number of bodies there are two moldings at the belt line, one adjacent to the windows usually running completely around the body and a lower one which extends from the radi-

ator to the extreme rear of the body where, in some cases, it slopes downward and disappears behind the fender.

This arrangement, which was a feature of one importers salon last year and was used later by Chrysler and others, now is used on the special Fisher bodies which Cadillac is featuring, and on Chandler, Cleveland, Willys-Knight, Nash and others. It tends to give the body a longer appearance and the molding forms a good dividing line for a two-tone job. This two-tone effect is used to excellent advantage on some of the other bodies mentioned in the preceding paragraph.

The pleasing effect produced by even a small amount of color on the superstructure is well illustrated by a Hudson and an Essex coach which are in the standard colors except for the addition of gray or cream color on moldings and around the windows and hood louvers. These touches of color are outlined with a red hair line stripe and set off the bodies in such a way as to give them a quite distinctive appearance.

Another body feature which has taken hold and is being used by a number of makes, including Marmon,

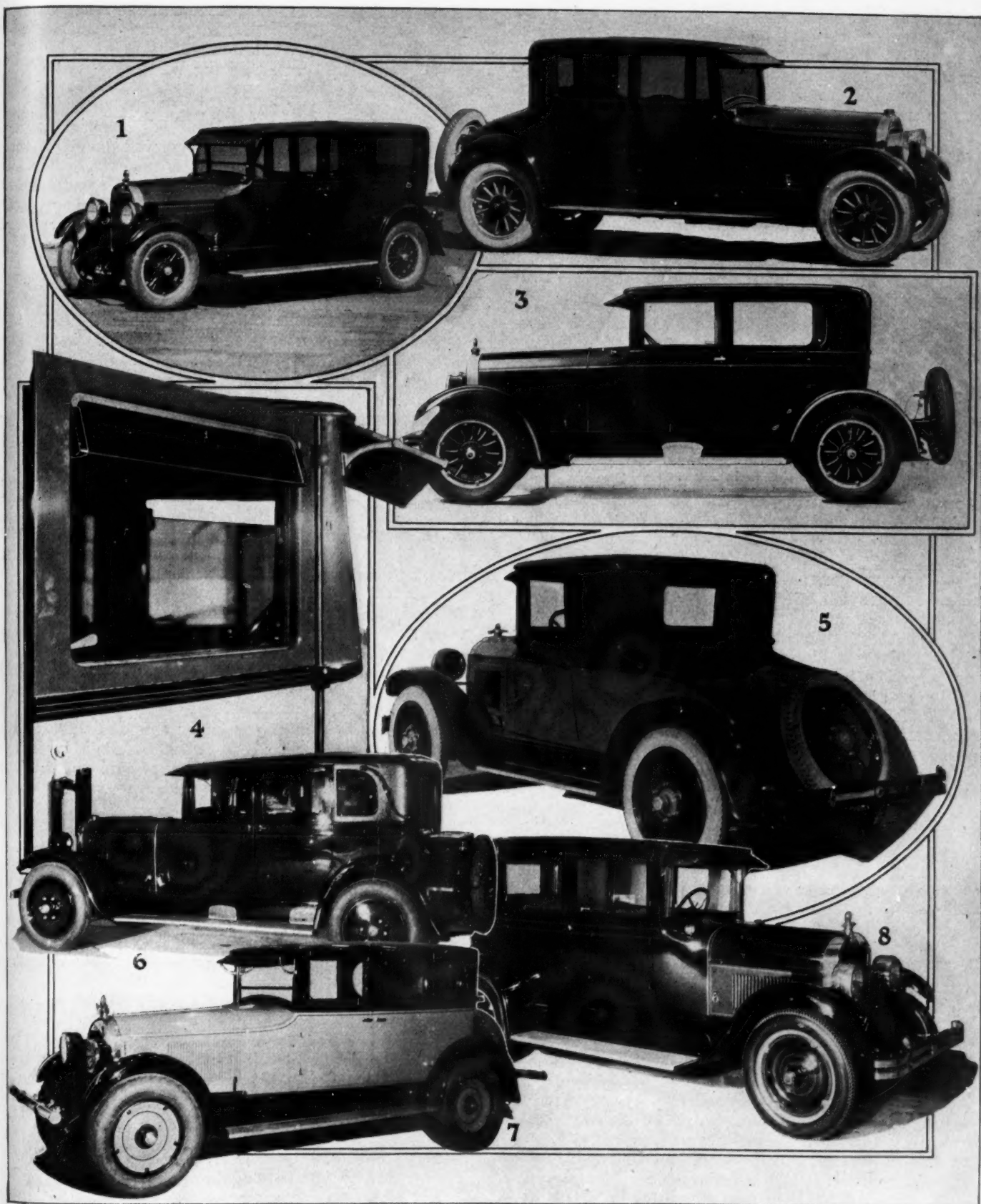


Fig. 1—Seven-passenger sedan on Peerless six-cylinder chassis. Fig. 2—One of the new custom bodies built for Cadillac by Fisher. This and the Chandler and Nash sedans shown in Figs. 3 and 6 and the Anderson coupe body on the Willys-Knight chassis, Fig. 5, have double belt line moldings, one of which extends across hood and runs full length of body. The Nash sedan and the Paige sedan, Fig. 7, show two interesting designs of rear quarter windows. Fig. 8 is one of the new Flint sedans. Note the curved visor. Fig. 4 shows the Hubbard ventilating eaves on an Apperson sedan

Buick, Willys-Knight, Paige, Kissel and others, particularly on special sedans, but in some cases also on coupes, is an elliptical window in the rear quarter, usually accompanied by a nickel plated landau iron for decoration. These irons are used in increasing numbers also on leather trimmed quarters which have no windows. In some cases the joints between the quarter and back coverings are extended in the form of fins which improve the contour line of the back.

Visors are becoming more decorative and are being designed more in keeping with body lines. Now they seldom look as if they were an afterthought tacked on after the body is completed. As heretofore, they form a part of the roof structure in some cases. In the case of the Star coupe, the visor acts also as a sort of air scoop, collecting air which is forced inside the body of the car above the windshield, which in this case is permanently fixed and of the one-piece type.

As predicted in these columns there are more one-piece windshields than heretofore. These include the "V. V." type operated by a regulator, which is fitted on a number of bodies built by Fisher. Another year promises to see more windshields with regulators or some form of quick adjustment.

Among the other features calculated to improve ventilating conditions mention should be made of the Hubbard "Ventilating Eaves" used by Apperson. These fittings are glass strips set at an angle at the top of the door window openings. They permit of opening the glass of the window part way without entry of rain and are said to provide effective ventilation.

Nickel Plating Increases

Nickel plated radiators, lamps and other fittings are more in evidence than ever. Special, de luxe or sport models are given prominence in nearly all exhibits and attract the bulk of attention. Most of these have a trunk or a rack at the rear on which to carry a trunk and have the necessary guard bars and rails to retain it and prevent it from rubbing the body.

Side mounting of tires is used in a number of cases where the tire might interfere with access to the trunk, but in only a few cases are the running boards cut off short below the cowl to make space for the tire. Front fenders are recessed for the tire as a rule, when side mounting is desired. Cast aluminum steps are used much less than they were a year or two ago.

Studebaker cars are equipped with molded rubber pads which cover the entire run boards and take the place of the linoleum covering ordinarily used. These pads have raised bars at the steps or door entrances so that no separate mats are required. Kick plates are used widely still but in general are made less conspicuous and do not extend the width of the run boards, but cover only the side aprons which they protect against scratching.

Car interiors still are trimmed in a great variety of materials. Mohairs and velvets predominate, but broadcloth is used in many of the more expensive jobs while granite cloth or other hard woven and durable worsteds are quite general in the cheaper grades of closed car. Except on business type coupes and sedans but little leather trimming is used. When employed it usually is spanish grain leather on seats and back rests with fabric leather side and head linings.

There is the usual variety in the color of fabrics. Gray and brown predominate, but blue and green are used to some extent. Interiors remain plain and somewhat severe. Striped velours are popular, but most fabrics are in plain colors or hair line effects. A few have a pattern in the weave.

Some new designs of interior hardware were noticed. Flint had some bodies with fittings partly enameled and employed Rawlings window regulators, in which the glass is raised by a roller spring when the "brake" nob is turned.

Chrysler, Rollin and Overland had new coupes which attracted some attention. Rollin's job is characterized by high body sides and a narrow colored panel between the two belt moldings, giving the effect of a rather low top. The Overland business coupe has an exceptionally wide door, leaving a quarter panel only some six or eight inches wide, hence no quarter windows are needed and yet there is clear vision to the sides.

Willys-Knight is showing two enclosed jobs just announced, the business coupe and the brougham.

Landau Type Body Backs

Several new coupes or broughams with soft backs and landau bows are making their bow including the Marmon sport coupe which is finished in gray Duco. This car has straight seat across the back with luggage space behind. Apperson is showing a new coupe. Chandler exhibits the recently announced chummy sedan and metropolitan sedan de luxe, also a chassis with special Willoughby sedan in two tone green listing at \$3215. Two new Chrysler models are displayed, the Crown Imperial sedan at \$2195 and the coupe at \$1885. Both are Fisher bodies with the new Fisher windshield. The sedan has an elliptical window in the rear quarter and has mohair upholstery, while the coupe has rumble seats for two.

Flint has a new brougham on the 55 and also the 40 chassis. The latter has four doors and seats five passengers while the former has two doors and the same seating capacity. Both are finished in Flint blue and equipment includes trunk rack, body rails and automatic windshield wiper.

Gray has a new three-passenger coupe at \$895 and a new five-passenger sport sedan at \$995. Both have balloon tires and disk wheels as standard equipment. The coupe is finished in black with gold striping, the sedan in two-tone Harding blue.

Hupmobile has a sedan de luxe finished in Duco blue and tan.

Rickenbacker has two new color jobs on the straight eight, a sedan in Dublin gray with black hood and coupe the same but with dust color hood.

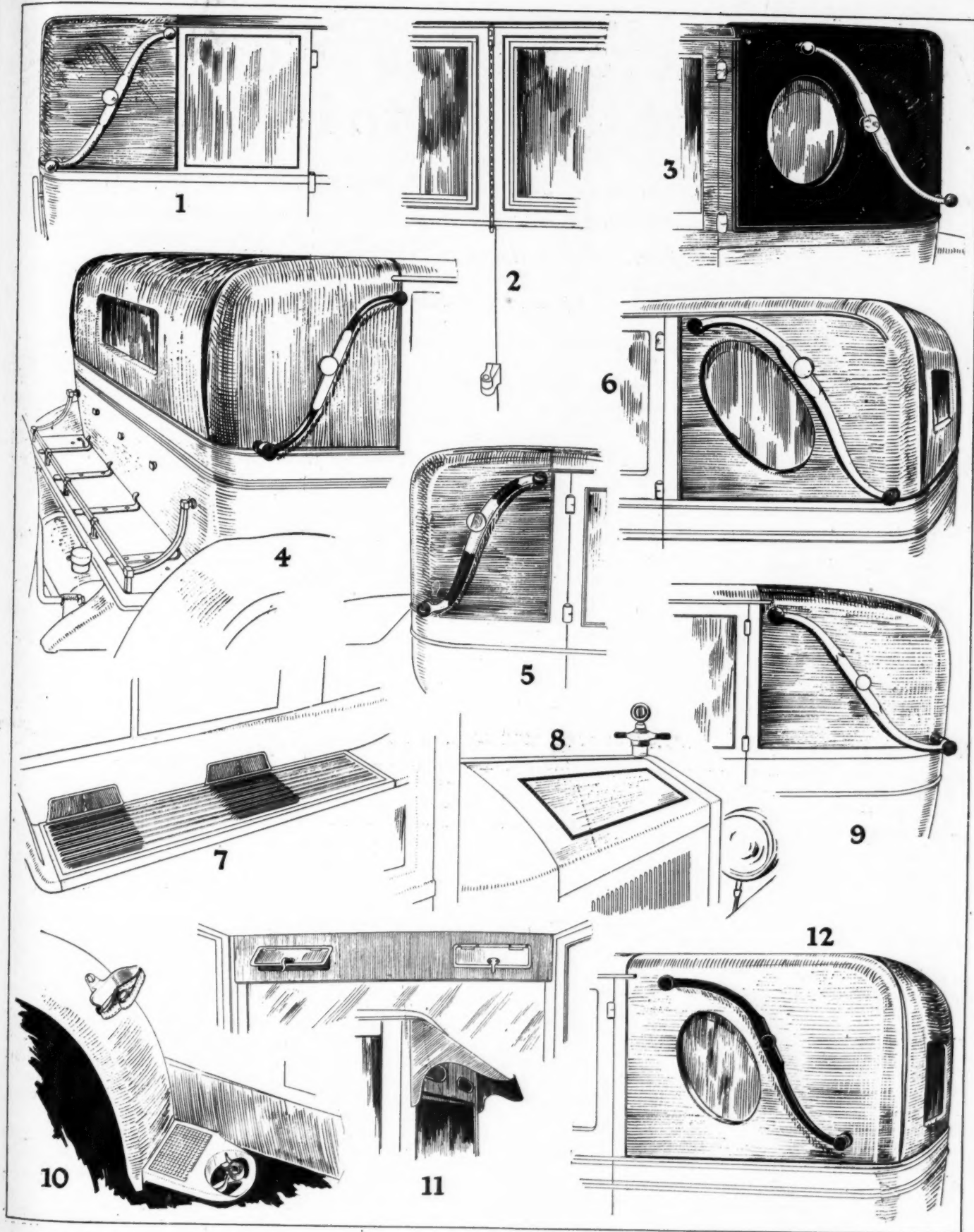
Star exhibits a new coupe with plush upholstery, larger doors, one-piece windshield and special ventilators. It lists at \$832 with four-wheel brakes and balloon tires extra.

All Maxwell bodies now are finished in Duco and have the instruments grouped in an oval.

The new Stearns-Knight light six made its bow and is the only real new chassis at the show. It differs from the big six in having 121 inch wheelbase. The engine is $3\frac{1}{4} \times 5$ in. Balloon tires are standard equipment and four-wheel brakes are extra.

Five entirely new custom-built closed body models, finished in color combinations selected by the purchaser, have been added to the Cadillac line. With the exception of the two-passenger coupe, which is furnished on the regular 132 in. chassis, the new bodies are mounted on a 138 in. wheelbase chassis which, however, does not differ from the standard V-63 model except in the matter of length. The bodies are built by Fisher and are fitted with the VV, one-piece sliding windshield.

Upholstery is either mohair velvet or broadcloth with broadlace trimmings. Colors harmonize with the exterior finish. Nested springs are used in the seat and back cushions and doors have walnut trimmings.



Some developments in body construction seen at the New York closed car show: 1, 3, 4, 5, 6, 9 and 12 show the style in Landau irons used purely for decorative purposes respectively on Moon, Marmon, Flint, Kissel, Willys-Knight, Chandler and Chrysler jobs. Some are all black or all nickel. Others combine black and nickel. 3, 6 and 12 show various arrangements and shapes of windows in rear quarters. 4—Decorative trunk rack and artificial leather fins at joints between quarter and back panels on Flint. 2—Combination of piano and forged hinges on Stearns coupe. 7—One-piece molded rubber mat in place of linoleum on Studebaker running board. 8—Embossed molding forming hood panel on Stearns coupe. 10—Golf bag carrier on Kissel coupe. 11—Adjustable ventilators over fixed windshield on Star coupe

Voluntary Production Cuts Have Brought Stability to Industry

5,000,000 production in 1924, once predicted, would have brought many ills in its train. Basic conditions more solid than ever before. Executives act conservatively.

By James H. Collins

THERE will be no overproduction of automobiles this year. That much is assured, and the assurance comes from voluntary action on the part of the industry. On the other hand, there has been no forced curtailment. Current production schedules are simply the result of good judgment on the part of the industry's leaders.

In the late months of 1920 we also had a curtailment in production, but only after demand had dropped and as a last forced measure by most companies. It is a matter of history that the slowing down in 1920 came somewhat late to save the business from all of the consequences of temporary overexpansion. In 1924, sound common sense has kept the industry from overrunning its market.

Automotive leadership in earlier years learned to build for future greatness. Now it is learning to save and to conserve that which has been built.

Earnings and Savings

James J. Hill once said that "it is not what you earn but what you save that counts." Similarly, for the automobile business it has not been sufficient to build greater and still greater markets. The time has come when those markets must be stabilized and kept on an even keel.

The present period is one of stabilization. That stabilization right now is being handled in a masterly way by men who are proving to the world their right to hold the reins of leadership. There never has been a time in the history of this business when its fundamentals have been so well grounded. Even conditions in the security markets show that Wall Street has been forced to make reluctant admission of the industry's increasing stability. The attitude of financial houses toward automotive paper is undergoing a gradual change. Automotive securities are being quoted more and more as "investments" and less as "speculations." The financial world understands sound conservatism where often it fails to understand expansion and rapid development. The action of the industry's leaders in trimming activities in advance of changing market conditions has substantially strengthened automobile credits during the last few months.

Present conditions are, however, the result of re-

IN this article, the third of the series on "Profits vs. Volume," Mr. Collins shows that in 1920, 2,205,197 cars were retailed for about \$2,975,000,000, while in 1923 the retail value fell off by \$310,000,000 from 1920 despite the fact that production was 85 per cent greater.

Next week an interview with Frederick J. Haynes by Norman G. Shidle tells how Dodge was kept on an even keel while the industry as a whole was in the doldrums. The story is filled with the very human personality of the Dodge president as well as with practical information for other automotive executives. You will want to read it.

cent changes of plans.

The year 1923 witnessed the biggest production in history. Its output of 4,086,997 motor vehicles topped the previous high production mark by 1,427,933. At the beginning of 1923 the productive capacity of the industry (actual and under construction) was sufficient for a maximum output of 4,300,000 motor vehicles. Actual construction and new contracts for construction entered into during the year increased the industry's productive capacity substantially. It is estimated

that available capacity at the beginning of 1924 was sufficient for a maximum output of 5,600,000 motor vehicles this year.

Production for the last two months of 1923 was at the rate of nearly 3,750,000 cars per annum. The swing into 1924 was made under a full pressure of steam. This is shown by the fact that the output for the first quarter of this year was 20 per cent greater than for the same period in 1923. In fact, production for the first three months of 1924 was at the rate of 4,265,000 vehicles per year. Early estimates of a total year's output of 4,500,000 cars were freely expressed; some going so far as to state that the 5,000,000 mark might be reached.

When Sales Slowed Up

Fortunately, the real leaders in the industry had their ears to the ground. Word from the dealer organization that sales were slowing somewhat brought immediate reaction at the factories. Overnight production slowed to synchronize with sales, and the net result has been no piling up of inventories of finished cars, no acute recurrence of "the used car problem," no sudden jump in dealer mortality. The industry found, somewhat to its surprise, that it could readjust itself to changing conditions almost over night.

Properly to appreciate what continued expansion would have meant it is necessary to revert to figures.

An output of 2,659,064 motor vehicles in 1922 sold at retail for about \$2,375,000,000. The following year a record output of 4,086,997 cars brought about \$2,665,000,000 at retail, price reductions and the higher percentage of low-priced cars holding down the total value of the output. A production in 1924 of 5,000,000 cars

(although such output was not seriously anticipated by thoughtful leaders) would have called for retail sales approximating \$3,325,000,000. This would have been about \$350,000,000 more than the public ever had been called upon previously to pay in one year, even at the crest of the boom period.

Such output would have been nothing short of disastrous. Even a production of 4,500,000 cars, predicted by a few enthusiasts among executives, would have been only slightly less disturbing. The result of such volume would have been a temporary increase in cash reserves for leading car makers at the expense of:

- (1) High dealer mortality, (2) demoralized markets.

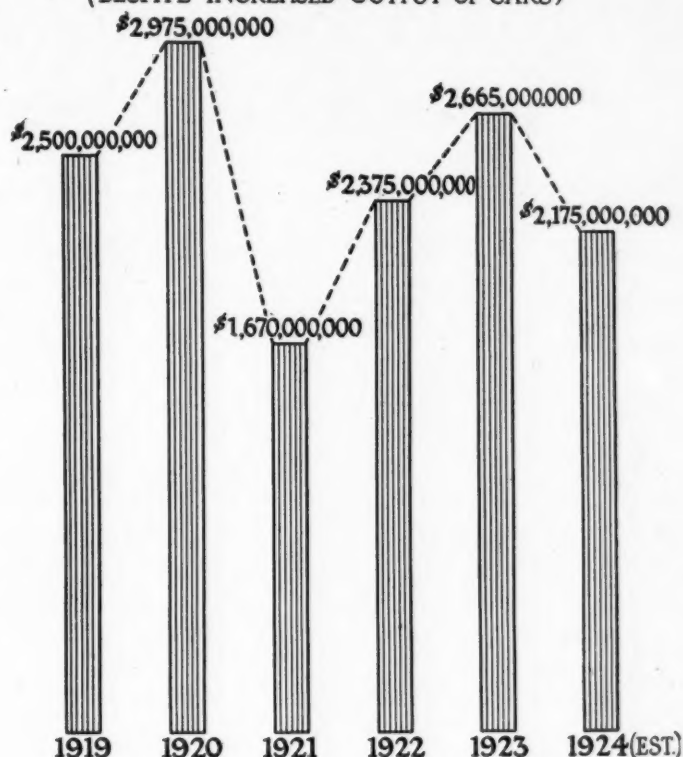
Sound business judgment prevented such a contingency. Strong hands were at the helm of the industry and the strength of this guidance was never more manifest than during the past few months, when ill-considered plans would have wrecked the balance of the business. A most significant fact in this year's program for the industry is that curtailment did not follow but actually preceded a slowing market.

There is another feature of the present market which merits attention. Superficial observation is apt to pass lightly over an important fact. That fact has to do with the broadening market for automotive products. In 1920 2,205,197 cars were retailed for about \$2,975,000,000. Last year 4,086,997 cars were made, but retail sales were \$2,665,000,000 or \$310,000,000 behind 1920, in spite of an 85 per cent greater output.

At present it looks as though 1924 output would be about 3,250,000 motor vehicles (45 per cent above 1920) with a retail value of about \$2,175,000,000 (27 per cent below 1920).

With about 45 per cent more people buying automobiles this year than in 1920, the drain on the public purse will be about 27 per cent less. A wider market has been developed, and a greater buying clientele built up without bringing the industry face to face with the old cry of "saturation point." At the end of 1920 the industry faced a temporary saturation point. At the end of 1924 basic market conditions, both internal and external, were never sounder, and this is at the end of a two-year period which has witnessed the greatest production in the history of the industry.

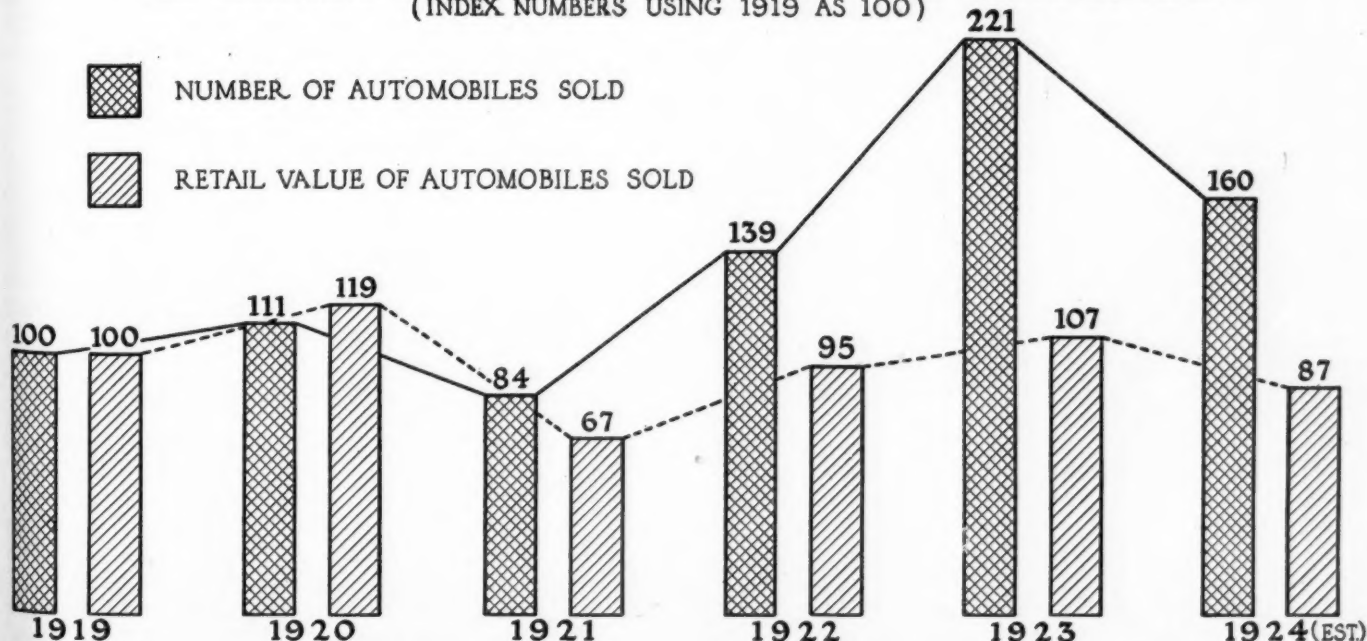
RETAIL SALES OF MOTOR VEHICLES FOR PAST SIX YEARS (SHOWING DECREASE IN GROSS SALES) (DESPITE INCREASED OUTPUT OF CARS)



The present season opened with a rush and is closing quietly and conservatively. In this respect we have the unusual spectacle of the automobile industry leading almost all other industries in conservatism in the midst of a period of growing optimism.

The general industrial situation over the country has never been better. The position of agricultural interests is at least 100 per cent better than it was six months ago. Every indication suggests that the next twelve months will witness continued prosperity. Best of all, the automobile business has no unusual inventories, is building close to its market and is in excellent strategic position to take advantage of improved conditions.

THE CHANGING RATIO BETWEEN NUMBER AND VALUE OF SALES (INDEX NUMBERS USING 1919 AS 100)



100 Hp. Knight Six Designed Specially for Large High Speed Buses

Low Maintenance Cost and Quiet Operation Among Objectives in New Product of Yellow Sleeve Valve Engine Works.
Many Features Credited to Harry Ricardo.

By B. M. Ikert

A NEW six-cylinder Knight engine, designed specially to meet the requirements of service in heavy motor coaches where rapid acceleration, high speed, quiet operation, high fuel economy, low oil consumption, minimum vibration and low maintenance costs are controlling factors, has been added to the line of the Yellow Sleeve Valve Engine Works, Inc., East Moline, Ill.

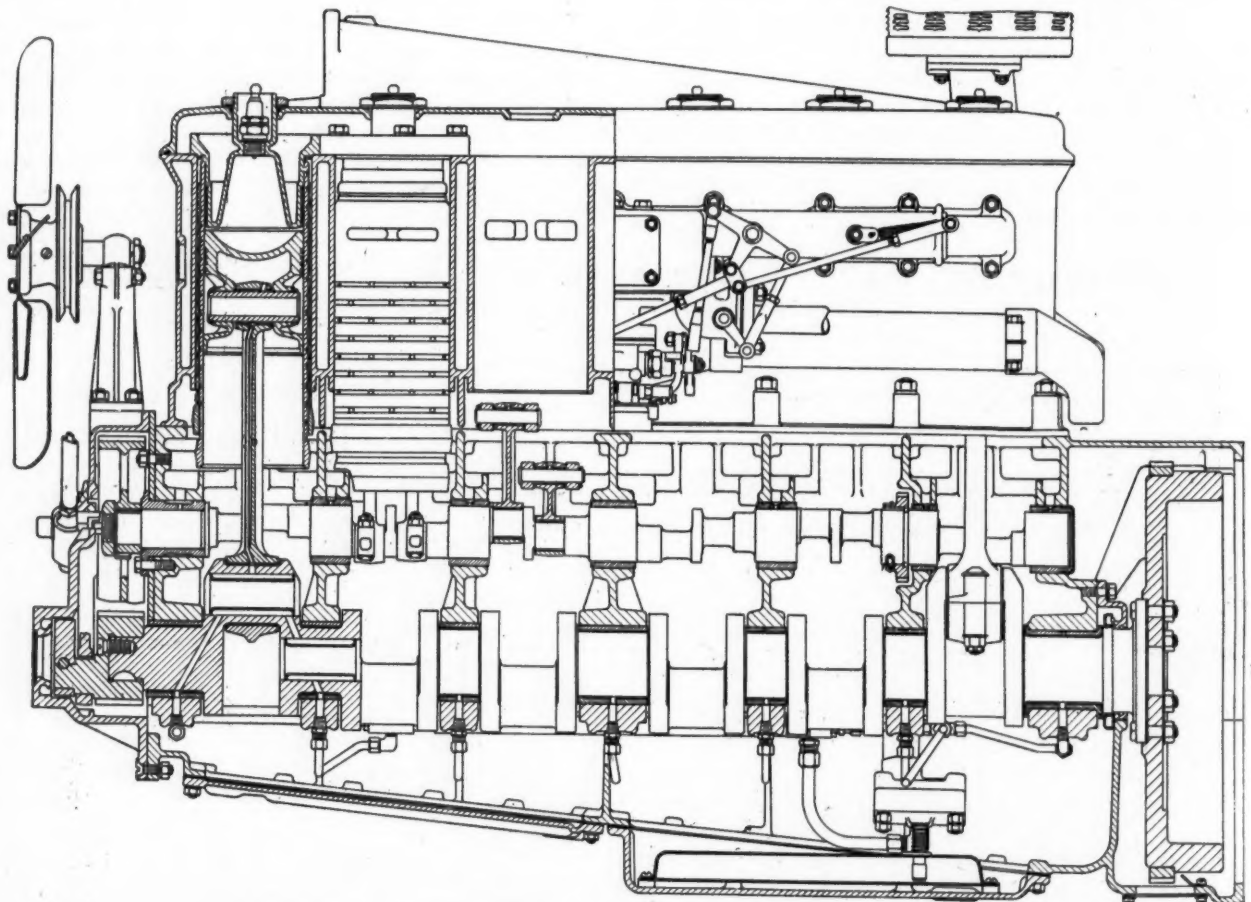
This engine is the result of the joint activity and experience of the Chicago Motor Coach Co., the Yellow Coach Manufacturing Co., Chicago, and the Yellow Sleeve Valve Engine Works. In addition many features of the new engine are credited to Harry Ricardo, consulting engineer to the companies mentioned.

When the design of the engine was started certain objectives, which may be summarized as follows, were established:

1—The attainment of performance superior to that available in existing coach engines, this to include maximum power and efficiency to be sustained through months of severe duty, high power to be developed at low engine speed, freedom from vibration and maximum quietness.

2—The above performance to be delivered at the lowest possible cost per mile and to involve high fuel economy, low oil consumption, elimination of valve grinding cost, reduction of cost of carbon removal, practical elimination of necessity for replacement of wearing parts in valve mechanism, of valve adjustment and of reboring, regrinding or replacing cylinder blocks due to wear. A maximum degree of accessibility also was to be attained.

Comparatively high first cost was not permitted to interfere with attaining the foregoing objectives since the company feels that such first cost of a coach engine



Longitudinal section of new Yellow sleeve valve six-cylinder bus engine

is justified if accompanied by improvement in performance or reduction in operating cost. Use of a seven-bearing crankshaft, liberal sections in the crankcase and ball bearings on the pump shaft, for example, are three items which increase first cost but which probably will increase engine life, decrease maintenance cost and improve performance.

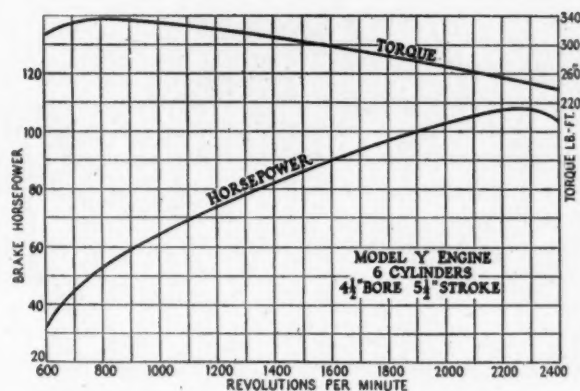
Maximum of 108 hp. Developed at 2200 r.p.m.

The engine is fitted with cylinders of $4\frac{1}{4}$ -in. bore, has a stroke of $5\frac{1}{2}$ in. and develops a maximum of 108 hp. at 2200 r.p.m. The maximum b.m.e.p. is given as 107 lb. per sq. in. As will be noted from the performance curve, torque at low and moderate speeds is high. Fuel consumption is said to be quite low throughout the speed range.

The crankcase is an excellent example of aluminum casting and is liberally ribbed to support the seven main bearings. The parting line is 2 in. below the center of the crankshaft and the flanges on the case are very wide, both features making for a very stiff structure. The integral bell housing is a No. 2 S. A. E. standard.

If desired, the engine can be furnished with an exposed flywheel, in which the crankcase is supported by a forged beam at the flywheel end. This is used by the Yellow Coach Manufacturing Co. in its type Z coach, designed for city use and having amidship gearsets.

The aluminum oil pan is closed at the bottom by a ribbed aluminum plate forward and an oil sump at the



Horsepower and torque-speed curves of Yellow six

rear. Studs and nuts hold these parts to the oil pan. This construction permits the removal of rods and pistons without having to take off the entire pan.

As will be noted from the illustrations, the crankshaft is very rugged and is designed for low bearing pressures and consequent minimum wear. The only noticeable period in this engine is said to occur at about 2400 r.p.m., but the engine is governed to a maximum operating speed of less than 2000 r.p.m.

Main bearings are $2\frac{3}{4}$ in. in diameter and of the following lengths: rear, $3\frac{1}{4}$ in.; center, $2\frac{15}{16}$ in.; front, $2\frac{3}{8}$ in.; four intermediate, $1\frac{11}{16}$ in. Crankpins are $2\frac{1}{2}$ in. in diameter and $2\frac{3}{8}$ in. long. The shaft is bored for lightness and in order to use the bored passages for oil ducts, flanged caps are inserted. A conventional flange is used for attaching the flywheel. The shaft material is No. 1045 S. A. E. steel, heat treated to a minimum Brinell hardness of 229. All journal diameters are held to within 0.0005 in.

Pistons are of aluminum with a solid skirt. Three plain $\frac{1}{8}$ -in. rings are fitted in the upper lands, with a slotted $\frac{3}{16}$ oil regulating ring immediately below. The lower ring groove is drilled for returning surplus oil through the inside of the piston. Piston pin bosses are recessed to allow space for retaining rings and abutment rings for the piston ring. Four vertical slots separate the bosses from the skirt.

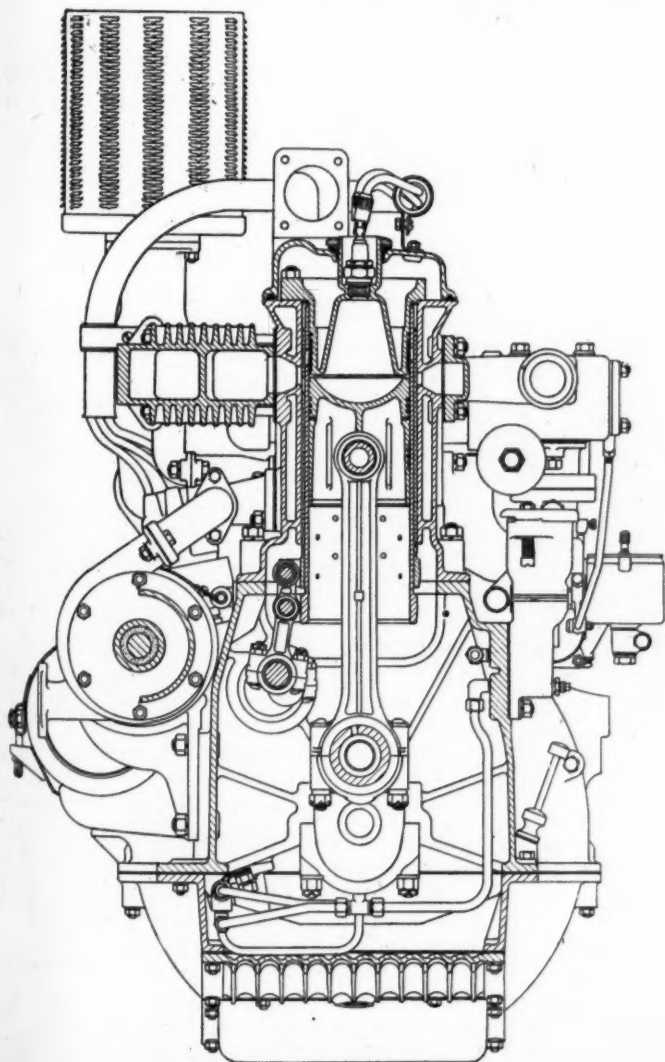
Piston Wall Extends Well Above Rings

Probably one of the most interesting features of the piston is the extension of the wall well above the ring grooves, with a consequent deepened cup in the piston head. When the piston is at the top of the stroke there is practically no exposure of the sleeve wall, the initial combustion chamber being almost entirely within the piston and cylinder head. Naturally this protects the oil film during the early and maximum temperature period.

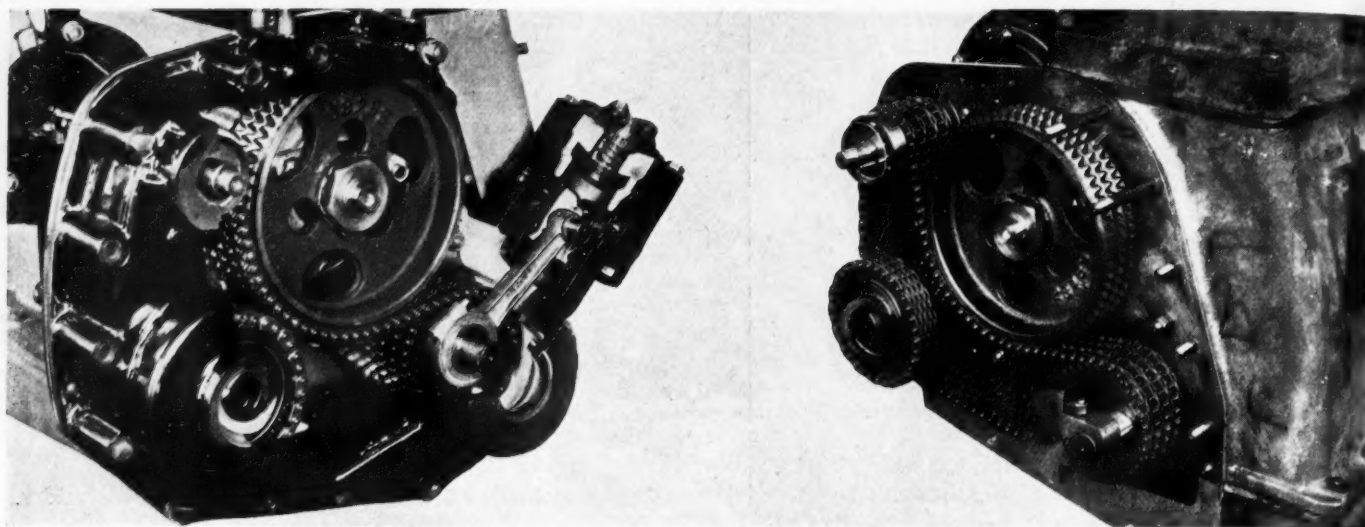
By use of the spherical combustion chamber, method of introducing the charge and central location of the plug usually high compression ratio is made possible. With a ratio of 4.8 it is claimed that no objectionable detonation has been experienced with standard fuels under varying condition of load and carbon accumulation.

Piston pins are hollow, of large diameter and held to 75 to 85 scleroscope hardness. The outside of the pin is lapped and the pin is held by wire snap rings which abut against steel washers next to the piston bosses.

Connecting rods are of I-section with babbitt cast directly into the big ends. The caps are retained by two alloy steel bolts. The upper ends are bronze bushed to bear on the floating piston pins. The rods are balanced to match the weight of a master rod, not only as



Transverse section of engine



Two views showing unusual layout of timing chain. An air compressor is driven off end of crankshaft

a whole but as regards the rotating and reciprocating ends.

Cylinders are cast in a block of six with integral water jacket. The inlet ports are paired for connecting to a three-branch manifold. Bridges are placed across the exhaust ports and these are cored to provide liberal water space and retain the oil film in proximity to the bridges. Each cylinder head is a separate casting held in place by six studs. The heads project inside the inner diameter of the valve sleeves and each head carries two rings; the lower a wide junk ring above which is fitted a $\frac{1}{8}$ -in. head ring. Combustion chambers are completely machined. Plugs are located in the top of the dome.

Aluminum Casting Used

A one-piece top aluminum casting covers the cylinder heads, closes the water jacket space and forms the water outlet for the cooling system. It is held by six brass nuts placed over tubular cylinder head extensions which house the spark plugs.

Sleeves are of hard close grained iron, the inner sleeve especially being of hard alloy to increase its life. Details of the oil grooving and drilling, valve porting, etc., are shown in an accompanying cut. The sleeve rods are I-section steel forgings with babbitted lower ends and bronze bushed upper ends. Pins connecting the sleeves to the rods are hardened and ground.

A short throw 12-pin eccentric shaft is used and this is machined from a solid bar of 1045 steel, heat treated and ground to close limits. The eccentric shaft is carried on seven bronze-bushed bearings. The journals are sufficiently large to permit assembly directly through the bearings.

A 2-in. wide silent chain drives the eccentric shaft as well as the accessory shafts. The general arrangement, which is quite unusual, is shown in one of the illustrations. At the lower left hand corner the chain passes over a sprocket which serves for adjusting the chain tension. A forward extension of this drive may be used for applying a starting crank in chassis installations in which the engine is offset from the chassis centerline. From the rear an auxiliary shaft may be extended, if desired, to drive any auxiliary equipment not otherwise provided for.

The chain case is a gray iron casting which forms the third point for engine suspension. It is attached to a steel plate which is interposed between crankcase and

chaincase and which takes care of the necessary extension for auxiliary drives.

A Swan type intake manifold embodies an integral heater unit at the junction of the three branches. The Zenith carburetor has a large diameter, hardened and ground throttle shaft, operating through stuffing boxes with definite provision for axial positioning of the butterfly valve. This insures freedom from air leaks and certainty of throttle operation over long periods of service.

An air cleaner filters the air which passes through a regulating valve that determines the proportion of incoming air to flow through the unheated passage to the carburetor and the hot air stove respectively. The air which does not go through the hot air stove is led through a thin walled steel tube around the rear of the cylinder block to the carburetor. A choke valve is mounted in an elbow attached to the carburetor.

A centrifugally operated governor is driven from the front end of the eccentric shaft through an inclosed shaft to a point just forward of and above the carburetor.

The exhaust manifold is grey iron, ribbed and attached by heat treated studs.

Water Pump Runs on Ball Bearings

A centrifugal water pump is placed on the exhaust side just back of the chain case and an extension of the pump shaft drives the saddle mounted generator. Annular ball bearings of liberal size support the pump and generator shaft. These bearings are mounted on each side of the driving sprocket. No bearing is needed, therefore, in the forward stuffing box of the pump while the bearing provided next to the rear stuffing box carries no load except that incidental to the whip of the shaft, an almost negligible quantity. Stuffing boxes are large and easy to get at.

In the electric system is included a Northeast generator designed especially for coach service. It is rated at 300 watts capacity and operates at 18 volts. Provision is made for operating the ignition unit from an extension of the oil pump shaft. The distributor seat is located on the exhaust side of the engine. The distributor is of the automatic type. A mounting for the starting motor is provided on the exhaust side of the engine. A flange face is provided for attaching the gear housing flange to the bell housing while a supporting saddle is attached to the crankcase.

The fan has four blades and runs on a plain bearing with flood lubrication. It is driven by a V-belt over large pulleys to insure long life. A neat arrangement is provided for maintaining proper belt tension. The fan bracket is a tubular malleable casting with a flat base bolted to the top of the chain case. A staff which carries the fan shaft is inserted in the tubular portion of the bracket and a clamp bolt holds it in place. Beneath the fan staff is a coil spring for returning the fan belt to the proper tension when the clamp bolt is loosened.

A built-in air pump capable of supplying air for brakes is provided. It has a single cylinder of 2-in. bore and 1½-in. stroke and is water cooled. The pump is driven directly from a small crank which forms an integral part of the crankshaft sprocket. A tube connects the air pump to the carburetor inlet extension so that the air drawn into the pump is taken through the air cleaner.

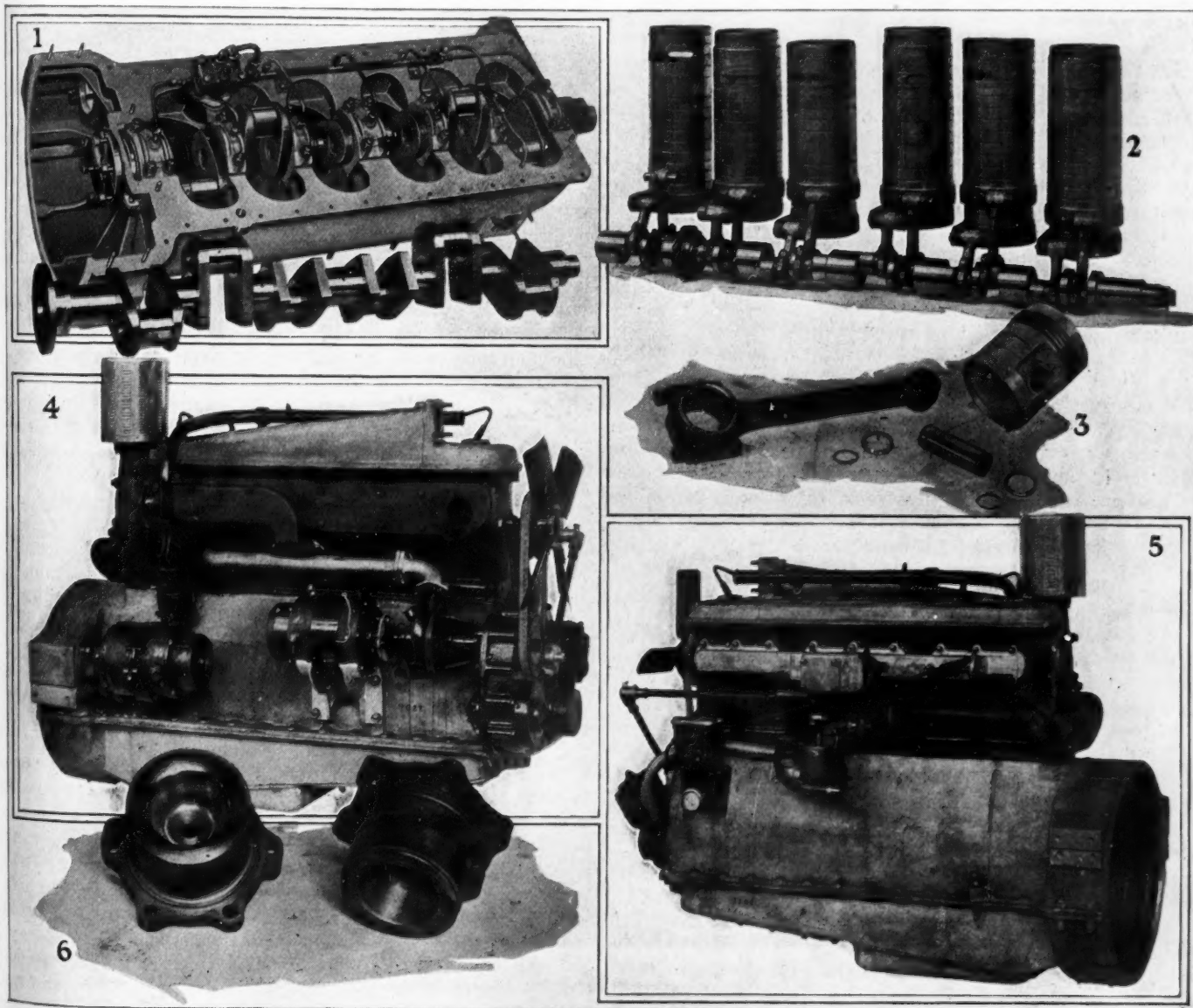
A helical gear just forward of the second eccentric shaft bearing—counting from the flywheel end—drives a slightly inclined shaft. The lower end of this shaft drives a submerged gear type oil pump. The inlet to the pump is by way of a large area strainer assembled

in the pump. The outlet leads to a manifold from which oil is carried to each main bearing cap. The backs of the babbitt lined bronze bearing shells are grooved and radial holes lead from these grooves to the journal surfaces.

Oil from the main bearings enters the crankshaft through holes drilled into the journals and feeds to the connecting rod bearings through annular spaces about the caps referred to above. Piston pins are oiled by tubes leading from the lower ends of the rods. Oil thrown off bearings is caught in pockets above the eccentric shaft bearings, whence it flows to these bearings. Pistons, sleeves and sleeve rods are lubricated by oil thrown off of crankshaft bearings.

Oil pressure is controlled by a spring-loaded by-pass in the oil filler housing. The tension of this spring, however, is controlled by a cam operated by a link to the throttle.

The tension of the spring and consequently, the oil pressure is increased as a function of the throttle opening rather than as a function of engine speed. Surplus oil is led through a tube to the chain case and takes care of the chains, air pump and auxiliary drive bearings.



Yellow sleeve valve six-cylinder bus engine and parts. 1—Bottom of crankcase showing the seven-bearing shaft. 2—Sleeve assembly. 3—Rod and piston. 4—Right side of engine. 5—Left side of engine. 6—Cylinder head

Car Sales Increased by Compulsory Liability Insurance in Switzerland

Widely discussed legislation termed an unqualified success by Swiss automobile dealers. Law introduced in one canton in 1913 exists in almost all cantons now. National legislation favored.

By W. F. Bradley

SATISFACTION at the working of the compulsory insurance liability law and a conviction that this measure has facilitated car sales are the two outstanding impressions gained from close inquiries made among all the leading members of the Swiss automobile industry.

Passing his hand over his brow, as if wiping away the recollection of an unpleasant dream, one of the partners in the Addor & Burnier Company, distributors of Studebaker, Ford, Lancia and Voisin cars in Lausanne, said "this law has put an end to the horrible prospect of being financially ruined by an unavoidable accident; it has given us peace of mind."

Mr. Albert Schmidt, Rolls-Royce importer, declared it to be a wonderfully successful piece of legislation. The Swiss branch of the Citroen Company stated that the law had helped them in their trade. Fiat representatives were equally emphatic that it was an all round, unqualified success. Throughout the line of Swiss automobile dealers the same opinions were expressed. Many were surprised to find that a measure which has given such good results in Switzerland was unknown and untried in other countries.

The Swiss insurance liability law is not entirely new. The Vaud Canton, which includes the town of Lausanne, introduced it in 1913, while Geneva adopted it only a year ago. At the present time insurance liability laws, varying only in their details, exist in practically every canton in Switzerland, and a measure is on foot, and doubtless will succeed next year, to make it a Federal law.

The Law, Eleven Years Later

The present law, in force in Lausanne, reads as follows:

"Permission to operate an automobile will be given only after the owner of the car has proved that he has taken out a liability insurance with a recognized insurance company for civil responsibility amounting to not less than 20,000 francs for an automobile and 10,000 francs for a motorcycle covering third parties who may be killed or injured in an accident caused by the vehicle.

"Proof that an insurance policy is carried must be renewed annually, and must be shown at all times on the request of competent authorities. Insurance policies must contain a clause to the effect that 10 per cent of the effective damage and a minimum of 100 francs for each accident, is not covered by the insurance, but must be borne by the person holding the policy. The insurance must cover all accidents caused by the automobile when driven by the owner or by some other person authorized by the owner."

Lausanne is distinctive in having a clause rendering the owner responsible for the first 10 per cent of the damages in each accident. This was done under the

impression that his personal responsibility being involved, the motorist would be less inclined to act recklessly.

In Geneva no such clause exists, but there the law requires that the insurance shall be for 30,000 francs for an accident in which one personal is involved and 100,000 francs for any accident involving more than one person. It should be noted that the law requires insurance to be carried for personal injury, there being no obligation to insure against material damage.

In American Currency

Translated into terms of American currency, the Swiss motorist living in Lausanne must carry a liability insurance to the amount of \$4,000 for each accident and in Geneva the amount must be \$20,000. The Federal law now in preparation doubtless will fix on \$20,000 as the amount of the insurance in case of civil responsibility. It should be noted that this will be a medium for which insurance must be carried and does not at all imply that the Courts will not condemn the automobilist to pay a higher amount if his fault is proved and the injuries justify it.

The system of car and driver registration in force in Switzerland for a number of years makes it an easy matter to enforce compulsory insurance. No person is authorized to drive an automobile unless he has passed a practical examination before a Government inspector. During this examination the candidate must furnish proof of real competence, and although there is no medical examination the inspector is entitled to refer candidates to a doctor if he suspects any physical disability likely to render the future driver dangerous to the public. The driving license carries the photograph and signature of the holder and although permanent, must be presented for renewal each year.

In addition to the registration tag, which remains in force so long as the automobile exists, no automobile can be put into service without a permit, which carries a full description of the vehicle, including the engine and chassis number, the name and address and the signature of the owner. Before this automobile permit is issued, the owner must show either his accident insurance policy or a receipt for the premium paid on the policy. The car permit must be renewed annually the first week in January and no renewal is given until proof has been furnished of the payment of the insurance premium.

As each Canton maintains a register of automobile owners it is possible to immediately detect cases of non-renewal. An official notice is at first mailed to the defaultant, and if no attention is paid to this within a certain length of time, the police are given instructions to act. In addition, the police frequently hold up motor-

ists during the first few weeks of the year to ascertain that their permit has been renewed. As there is a very high penalty for operating a car without an official permit, it is stated that it is very rare indeed that attempts are made to evade the insurance law.

Switzerland has 30,000 automobiles in service, the great majority of these being low powered moderately-priced machines used for general utility purposes. Compulsory liability insurance was proposed because most of these owners, while having the means to purchase and maintain an automobile were incapable of facing the civil responsibility of a serious accident.

Prejudice Against Automobiles Removed

Members of the Swiss automobile industry agree that whereas a few years ago the Courts were inclined to prejudice against automobiles, they now interpret the law in a fair-minded spirit. In cases where a breadwinner was killed or injured for life the amount of compensation allowed by the Judge was likely to be so high that the average motorist was incapable of meeting it. There was a danger either of the victim receiving no compensation, despite the ruling of the court, or of the author of the accident being ruined for life. Compulsory liability insurance has removed both dangers and because of this has tended towards increased sales.

All insurance in Switzerland is in the hands of private companies operating under direct State control, and by reason of competition premiums are low. For a small two-seater, officially rated at 5 hp., and which would comprize such cars as the small Citroen, Renault and Peugeot, the minimum premium given by one of the leading companies is \$13.70 a year, this covering the minimum Government insurance of \$6,000 for an accident to one person, \$20,000 for injuries to more than one person and, although not required by law, \$400 for material damage. For a 12 hp. car, under which heading would be included four passenger Talbots, Renaults, Citroens, Fiats, etc., the annual premium for the same insurance is \$21, and for a 30 hp. car \$23.70.

Looking upon compulsory liability insurance as an additional cost in car maintenance, the charge on the owner, in order to meet with the minimum requirements of the law, varies from 1.8 per cent to 0.79 per cent of the purchase price of the car. The following are actual examples:

| Car | Purchase Price | Annual Insurance Premium | Percentage on Purchase Price |
|-----------------------------|----------------|--------------------------|------------------------------|
| Citroen 5 hp. 2-seater..... | \$742 | \$13.70 | 1.8 |
| Citroen 10 hp. 4-seater.... | 1,212 | 21.00 | 1.73 |
| Fiat 10 hp. 4-seater..... | 1,360 | 21.00 | 1.61 |
| Talbot 10 hp. 4-seater..... | 1,400 | 21.00 | 1.5 |
| Delage 30 hp. 6-passenger. | 3,000 | 23.70 | 0.79 |

Insurance Carried and Its Cost

While the above covers all the requirements of the law, it is found that most motorists carry insurance for \$10,000 for injuries to one person, \$30,000 for more than one person and \$1,000 for property damage, the premium for this being \$15.20, \$22.40 and \$26 for the three classes of cars tabulated above.

The anual percentage on the purchase price in order to carry this fairly liberal amount of insurance is 2.15 per cent of a \$742 Citroen, 1.6 per cent on a 10 hp. \$1400 talbot, and 0.87 per cent on a \$3,000 30 hp. Delage. For trucks the amount is generally higher, the annual premium for a 3-ton truck being \$25 for responsibility limited to \$6,000 to one person, \$20,000 for more than one person involved in the same accident, and \$400 material damages. If the amounts insured for are in-

creased to \$20,000, \$40,000 and \$1,000, respectively, the annual premium is \$32.60.

Up to the present compulsory insurance has not been applied to foreigners traveling in Switzerland under an international license. If a foreigner has his car registered in Switzerland and uses a Swiss driving license, he is treated in the same way as a native.

The view point of the authorities is that foreign motorists going into Switzerland are generally sufficiently rich to be able to meet all civil responsibility. In the majority of cases this works satisfactorily, but at the same time it is realized that motorists of very moderate means sometimes come into Switzerland from such neighboring countries as France, Germany and Italy, and that they constitute a danger. Proposals have been made for Government insurance to cover short-time visitors, by charging a fee at the frontier station as the individual parties come into the country.

Members of the automobile industry state that they have been dealt with honestly by the insurance companies. Competition alone is sufficient to keep rates low, and if there is any supposed case of abuse it is only necessary to report it to the Federal Insurance Office at Berne for an immediate investigation to be made.

The example set by the Cantons which adopted liability insurance eleven years ago was so strong that when insurance was made compulsory a year ago in Geneva, business increased by only 2 per cent, according to one of the leading companies. It is maintained by several of the insurance companies that they are losing money on automobile insurance, but they look upon this branch of the business as advertising and gain on life and property insurance.

At present the victim of an accident must prove that the automobilist was at fault in order to obtain compensation. Under the Federal law now being drafted, it is proposed to make the motorist responsible for all accidents he may cause, unless he can prove that the victim was grossly negligent. Insurance companies are inclined to favor this change in the law, on the ground that it will simplify the settlement of claims. They admit, however, that if adopted this measure will cause insurance rates to go up 20 to 50 per cent. Because of this motorists as a whole claim that the onus of proving the motorist's fault should fall on the victim, as at present.

Test Airplane Storage Batteries

WORK has been resumed by the Bureau of Standards on the investigation concerning the temperature coefficients and capacities of airplane storage batteries. A number of discharges on thin plate batteries have been made in a refrigerating box at temperatures of freezing and below. These tests have developed certain unexpected difficulties arising from the behavior of the negative plates. It has been found that in a battery of which the positive plates limit the capacity at ordinary temperatures, these same batteries when subjected to low temperatures are deficient in capacity at the negative plates. The curve relating temperature and capacity therefore does not have the usual form, and it appears necessary to make experiments to determine the temperature coefficient of the positive plates and negative plates separately. The importance of this work arises from the fact that these airplane batteries are subjected to extremely low temperatures at high altitudes where it is important that they should function satisfactorily. A special experimental cell has been devised to be used in these experiments.

New Machine Tools "Do Their Stuff" at Steel Treating Exhibit

Production men see recent products in action at show held as part of American Society for Steel Treating convention.

X-ray analysis to aid alloy steel progress.

AN unusually large machine tool exhibition, discussion of progress made in the use of the X-ray in metallurgical analysis, outline of a new automotive heat-treating installation, and exhibits indicating considerable advance in development of precision gages and tools for production work, were the features of chief interest to automotive men at the sixth annual convention of the American Society for Steel Treating held in Boston, Sept. 22 to 26.

The steel exposition, held on Commonwealth Pier in connection with the convention, had nearly 250 different exhibitors, among whom were included a large proportion of the important machine tool companies which supply automotive manufacturers. The tools all were shown in action and attracted good crowds practically every afternoon except on the opening day. Relatively few representatives of the automotive industry took advantage of this very excellent opportunity to get quickly a clear picture of recent machine tool achievements, but those who were in attendance came away with many interesting new facts. Practically all of the equipment shown already has been described in these columns, but the exhibit gained particular favor because it gave the production men a chance to see the new tools "do their stuff."

F. L. Wright, Atlas Ball Co.; Dr. W. P. Davey, General Electric Co., and H. H. Lester, Watertown Arsenal, in papers read at the meeting showed that the X-ray has become a really important factor in analysis of iron and steel, while discussion indicated that its use in the future may result in solution of some alloy steel analysis problems which thus far have perplexed metallurgists. The importance to the automotive industry of these laboratory efforts may not be great in the immediate future. Their significance is in the scientific rather than the practical field at the present moment, but their ultimate effects may have a very definite bearing on future automotive steels.

Tensile Strength and Liquid Air

W. P. Sykes, metallurgical engineer with the Cleveland Wire Division of the National Lamp Works of the General Electric Co., reported that according to researches carried out by him, various steels increase greatly in tensile strength at the temperature of liquid air. For instance, a chrome-molybdenum steel, water quenched, showed a tensile strength of 306,500 p.s.i. at the temperature of liquid air (-292 deg. Fahr.), as compared with 261,000 p.s.i. at 77 deg. Fahr. The elongation of the steel was greater but the reduction of area less at the lower temperature. Corresponding results were obtained with a carbon and a nickel steel.

An interesting paper on salt baths was presented by Sam Tour, Doehler Die Casting Co., who said that liquid baths are used in heat treating work because they are non-scaling and non-oxidizing, give a hard surface layer

similar to that produced by case-hardening, heat the work more uniformly, eliminate troubles due to warping and cracking, increase the rate of heating and hence the volume of production, ensure greater uniformity of product and lessen costs.

Before any specific liquid is adopted the following question should be answered: Will it scale, pit, corrode, decarburize, cyanide or carburize the steel today, tomorrow, or after continuous operation for a period of several months? Although a liquid bath is not of the same temperature throughout, it will heat a charge of work more uniformly than any other heating device. The work must not be allowed to touch the walls of the bath and the thermo-couple must be so located as to accurately indicate the temperature of the major portion of the bath.

Samuel L. Hoyt, metallurgist at the Research Laboratory of the General Electric Co. at Schenectady, N. Y., in a paper on "Metallurgical Education," said that our present metallurgical education trains the hands much more than the mind. More prominence should be given to the fundamentals of the science and the successful man would apply them with intelligence and discretion to the particular problems with which he has to deal.

Automatic Equipment Used in Hupp Heat-Treating Work

J. M. Watson, of the Hupp Motor Car Co., who presented a paper on "The Heat Treatment of Automobile Parts," said that his firm formerly used stationary furnaces, and in order to turn out the necessary amount of work it was compelled to run two shifts almost continuously. About a year ago it decided to build and equip a new heat-treating department. The best possible results were wanted, and the equipment was to be automatic as far as possible. It was found necessary to build the furnaces specially, to adapt them to the company's peculiar needs. Mr. Watson's paper, which is descriptive of the Hupp installation, is reproduced herewith in somewhat condensed form.

One furnace (Fig. 1) is used exclusively for normalizing forgings and annealing cast iron parts. It is equipped with a continuous pan conveyor, the pans being made of a heat-resisting alloy and so designed that they hook together at the bottom. They are grooved on the bottom so as to fit skid bars on the hearth of the furnace, over which the conveyor slides. One point in the construction of this furnace that deserves mention is that the pans are pushed through instead of being pulled. Two parallel hooks, mounted on a shaft, engage with projections on the bottom of the pans and push them forward at the bottom of each stroke. The shaft to which the

Showing Methods of Handling and Treating

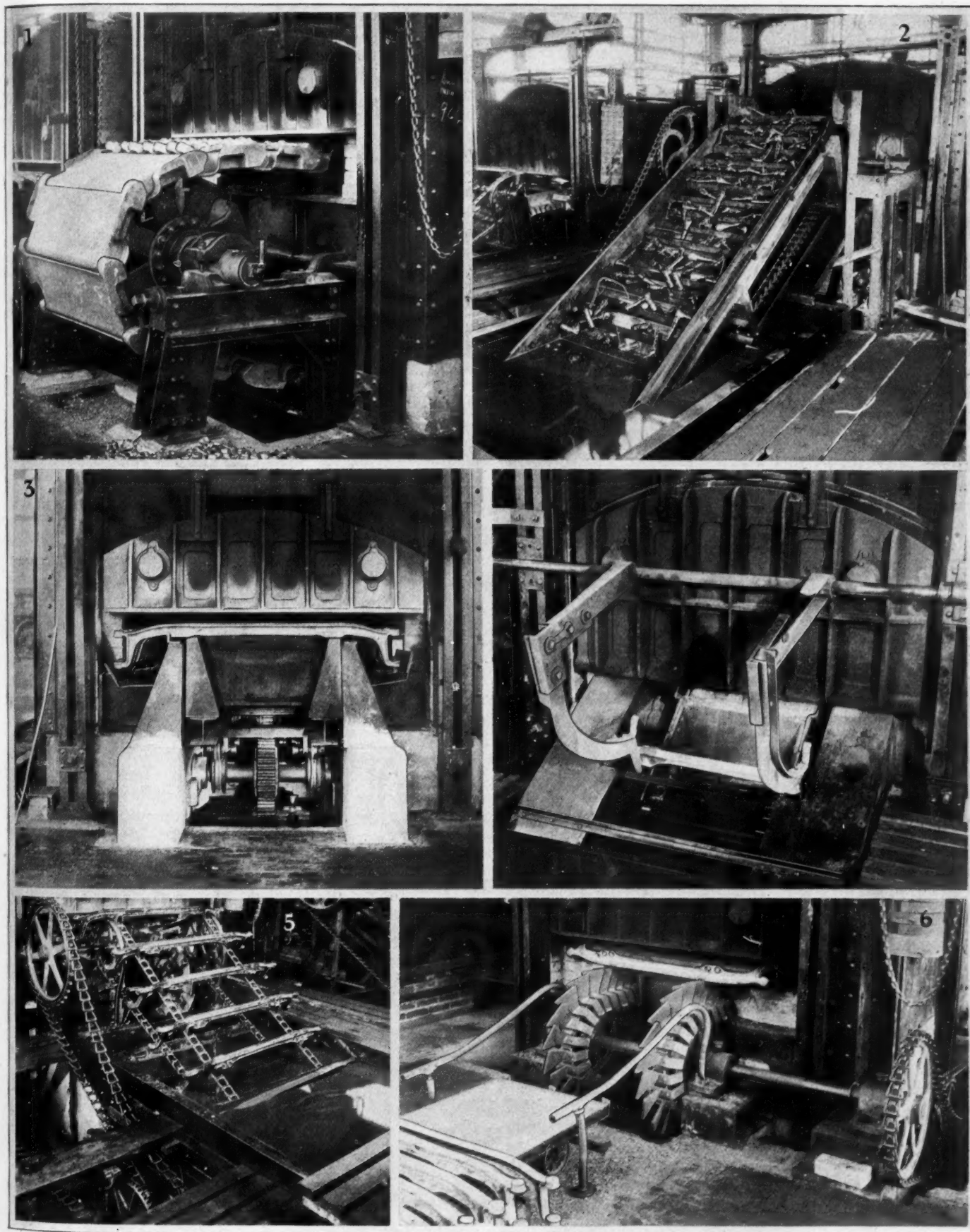


Fig. 1—Showing construction of normalizing furnace and method of charging. Fig. 2—Perforated pan conveyor which takes the small parts from the quenching bath to the draw furnace. Fig. 3—Hardening unit for I beam furnace. Fig. 4—Quenching I beams. Fig. 5—Showing method of conveying I beams from oil tank to draw furnace. Fig. 6—Radial blade conveyor construction for I beam draw furnace

hooks are secured is located at the end of an arm which is rocked back and forth by a motor driven crank. At the conclusion of the forward stroke it is necessary to hold the hooks up against the bottom of the pan conveyor, so they will engage the next pan at the proper moment. This is done by parallel floating levers pivoted on another shaft on the rocker arm. A counter weight on the lower end of each lever holds the upper end against the bottom of the hook. The upper end has a double flange which engages the hook arm without interfering with its forward or backward movement.

There are counter weighted doors at each end of the furnace which are kept open just enough to clear the pieces in the furnace. All the parts are carefully laid on the pans and no piling of materials is allowed. At the discharge end of the furnace the parts fall into trucks and are carried to the hardening furnace. The inside dimensions of the furnace are 5 by 18 ft.

The second unit of the equipment is a furnace for small parts, such as steering knuckles, equalizer pivots, drive shafts, etc. This unit consists of two furnaces, one for the hardening heat and the other for the drawing heat. These furnaces are of the same design and dimensions as the normalizing furnace described above, with one or two changes. At the discharge end of the hardening furnace the material is dropped into a bath of quenching oil. The furnace end is so covered that the parts do not come in contact with the outside air at all. This prevents any lowering of the heat of the part and does away with a great deal of scaling.

The parts are picked out of the oil bath by a pan conveyor (Fig. 2) which has perforations in the bottom of the pans to allow the oil to drain off. They are deposited on the conveyor of the draw furnace but, of course, are piled up. This is a condition that tends to promote non-uniformity, so in order to level the forgings out, a heavy piece of sheet iron is hung right in front of the door. This has enough weight and spring so the knuckles, etc., are smoothed out and go through the furnace so as to get a uniform draw.

The unit for heat treating front axle I-beams is of an entirely different construction. The forgings are carried through the furnace on a moving hearth (Fig. 3) which has a forward stroke of 6 in. As the hearth is raised up by cams located in the bottom of the furnace it picks up the I-beams, which are resting on piers. These are carried forward, and as the hearth begins its downward stroke they come to rest on the piers again. This process is continuous, the piers extending the whole length of the furnace. The hearth is operated by two sets of cams which come in contact with saddles bolted to its bottom. There are four cams, two at each end of the furnace. These are operated by gears which in turn are driven by a variable speed motor.

Discharge End of Furnace

When the forgings reach the discharge end of the furnace they drop on a pair of counterbalanced fingers, which assures their dropping into the oil in a level position, thus preventing excessive warpage. They drop onto a chain conveyor (Fig. 5) equipped with fingers so spaced that they synchronize with the movement of the hardening unit. They are picked out of the oil and conveyed to the draw furnace of this unit. This furnace is equipped with a radial blade conveyor made by riveting fan-like blades to a link chain (Fig. 6). These blades are so staggered that they overlap and form an endless belt. At the discharge end of this furnace the axles are dropped onto trucks.

The furnaces are equipped with four burners each, two on each side, staggered so as to give uniform heating.

Fuel oil is supplied under pressure from storage tanks placed under the platform at the end of the building. A capacity of 30,000 gal. is provided, and each tank is equipped with a steam coil to keep the oil fluid in cold weather.

There are two tanks provided for the quenching oil—a large 15,000 gal. tank for the main storage and a smaller one holding 4000 gal.—in the building. This latter oil is kept in constant circulation by pumps. It enters the quenching tanks directly under the discharge end of the hardening furnaces, so that the work being treated comes in contact with cold oil as it passes out and is carried back, where it goes through a series of filters to remove any scale or dirt that may have collected. It then passes over a series of baffle plates and pipes through which cold water is continually passing. This water is cooled in turn by being pumped through a spray pond.

Temperature and Its Control

The results obtained in heat treating steel depend a great deal on the temperature of the quenching oil, and by the method just described a maximum temperature of 110 deg. Fahr. is maintained.

Another very vital part in good heat treatment is temperature control. The furnaces described above are each equipped with two thermo-couples, one about two-thirds the length of the furnace where the parts reach their maximum temperature, and the other at the discharge end, to make sure that the correct temperature has been maintained. On the side of each furnace has been placed a deviation indicator to show the number of degrees the temperature is varying from that desired. Over the furnaces are hung signal lights to show the condition of the furnace; if a red light shows, the temperature is too high; if blue, the temperature is too low; and a white light shows the heat is correct. These lights switch between the two thermo-couples once a minute so the temperature of the critical zone of the furnace is known at all times. Recording instruments are kept in the foreman's office, as a permanent record is kept of all operations.

Following the heat treating processes all the vital parts, such as steering knuckles, steering knuckle arms, I-beams, drive shafts, etc., are given 100 per cent Brinell inspection.

A study of the relationship between Brinell and Rockwell hardness numbers made in the Materials Testing Laboratory of the Massachusetts Institute of Technology was reported on in a paper by Prof. Irving H. Cowdrey.

In a paper on X-ray Crystal Analysis in Metallurgy, W. P. Davey of the General Electric Company's Research Laboratories pointed out that all solids and their alloys are crystalline. This means that their atoms are arranged in space according to some definite geometrical pattern, so that if we could see them as they exist in the crystal we would have a picture something like a lot of ball bearings systematically packed in a box. The arrangement of the atoms of a metal in a crystal and the distances between atomic centers are just as characteristic of that metal as its density or melting point.

W. J. Merten, metallurgical engineer of the Westinghouse Electric & Mfg. Co., presented a paper on "Soft Spots in Quenched High Carbon and Carburized Steels Heated for Quenching in Fused Salt Baths—Their Cause and Prevention."

J. A. Doyle of the W. S. Rockwell Co. presented a paper on "Selection of Fuel for the Heat Treatment of Metal." Mr. Doyle said each form of fuel has its field of usefulness as well as its limitations. The real problem from the heat treaters' point of view is that of producing a quality product at low cost.

British Buyers Still Consider Cars as Luxuries

Automobiles are purchased on a permanent investment basis, for advancement in business is very slow though certain. A man's future income consequently is fixed over a period of years.

By Harry Tipper

SOCIAL conditions in Great Britain are such as to fundamentally affect the market for motor cars, altering its aspect very greatly from the character of the market in the United States. Similarly the attitude of the British buyer in his ownership of a car must be considered in order to arrive at a true estimate of the tendencies of the market and the rate of its progress.

Business has not been expanding with any great rapidity in England for a great many years. Employment has been a practically continuous problem for thirty years at least and, with the exception of the war, new factories have been built slowly and new industries have arisen with difficulty.

As a consequence of this condition the Britisher's attitude toward a job, particularly in those ranks which are not included in skilled labor, is very different. Promotion is slow and a job cannot be lightly given up, because of the difficulty in securing another.

There is a conservation of business organization; it lacks the flow and change which has been the daily experience with us in the United States, so that in general the future must be faced in terms of the present income. It is not possible for the average man to speculate upon his future progress in his present examination of his buying capacity.

A friend of mine in western England, who figured he had reached in his line of business the maximum probable income, at least for a number of years, was engaged in fitting himself for a different line of progress which offered, to his mind, more possibility. He estimated that in ten years' time he would be a sufficient master of this development to enable him to increase his income beyond what he was securing in his present occupation.

Generally speaking, the business men in a given executive position are older than they are in this country, because the movement of business is not sufficiently rapid to enable organization changes to occur more quickly. Consequently the individual in Great Britain considers his expenditures more carefully than we are accustomed to do.

Incomes Are Predetermined

His income possibilities in the future are, on the average, fairly definite. He is able to estimate with considerable accuracy what his probable income will be for a number of years. His expenses tend to increase as he grows older and he must be more careful to acquire some sort of surplus with which to face the possibility of illness and increased family responsibilities.

From long traditional habit of consideration, he is more careful about spending his capital or savings in conveniences and comforts, and he is particularly interested in the operating cost which may be involved in acquiring any new property of any kind. His budget must allow for heavy fixed charges in relation to his income and, as a

consequence, any purchase which involves considerable cash outlay and requires additional expense after the purchase has been made is of an importance which it is difficult for us to comprehend. The buying of a motor car is a much more important matter there than it is here.

Motor cars are not any cheaper—as a matter of fact, they are relatively much more expensive in their first cost, and their operation involves a relatively higher drain upon the current income. Furthermore, that income does not present the possibilities of increase to which we have been accustomed in the United States and, therefore, future obligation cannot be assumed with the idea that it will be met by the larger future income that may be expected with diligent attention to business.

Perhaps because of this condition, the first cost of the car is not quite so important to the British buyer as the operating cost, for which he must make allowance in his current budget after the purchase has been made.

Seven and Eight Horsepower Cars

A seven or eight horsepower car, the light car type at 160 pounds sterling, is by no means a cheap purchase, yet such cars are being sold in quantities in Great Britain in preference to imported cars of greater power and larger dimensions which can be sold for less. The reasons for this are apparent. The small car is capable of being operated with a much lighter drain upon the monthly budget and therefore is a much more satisfactory purchase from the Britisher's point of view, unless he belongs to that section of the population who do not need to figure their incomes so closely.

This condition brings about a much keener interest in the operating costs, the amount of labor and service required on a car and the cost of housing it. The British buyer examines more carefully the full suitability of the car to his requirements. He wants to know more about it; he is not satisfied with a superficial examination. He cannot afford to experiment, charging the experiment to profit and loss. When he buys, he must be prepared to use what he has or sell it for what he can get and do without until he can repair the mistake.

In buying a car, therefore, he is much more interested in the details regarding the car itself. This interest is indicated by the large circulation of magazines devoted entirely to motoring, mainly from the owners' standpoint. The largest of these has a circulation in excess of 120,000 and it is mainly written for the individual car owner.

When it is figured that the number of cars and trucks in Great Britain is around 400,000 and that the number of owners who buy a motor magazine is close to 200,000, there can be no doubt about the deep interest which is maintained in the details of car construction and operation and the details of its performance and value.

A friend of mine in the north of England, who has a family of four children ranging from fourteen to twenty years of age, subscribed to four motor magazines when he became interested in the purchase of a car, and finally settled upon one which most suited his tastes. He told me that they spent almost as much time in the consideration of the buying of this car as they did in the buying of the house, which he purchased about the same time.

The business of selling automobiles on time payments represents a comparatively small percentage of the total in Great Britain. While in some quarters there is a definite claim that this type of buying is on the increase, it is moving very slowly.

Question of Taste

The tastes of the British buyer, even in matters of detail, are much more definitely exhibited than they are in this country. Accustomed to give more importance to the individual purchase, the British buyer from his consideration of the matter derives a more definite idea as to what he wants, not merely in the make of the car but in the character and value to him.

These conditions, coupled with the different social surroundings which were discussed in the last article, give rise to the following elements in buying which are of importance in the merchandising and promotion work in connection with any car which is to be put upon the market in that country:

1. The purchase of an automobile is more important and, therefore, it receives a larger scrutiny and consideration, this scrutiny going more fully into the details of the cost, suitability, the operation and the service required.
2. The automobile in the hands of the British purchaser must last without change of ownership a longer time than is usual in the United States. As a consequence of this, the probable wearing qualities of the car are of much more importance, as they affect the amount and cost of the repairs which will be required.
3. The British motorist is more definite in his opinions regarding the value of mechanical contrivances and appointments and all the elements which make up the general suitability of the car. He requires a more definite explanation of these matters and examines them more carefully.
4. Buying is done to a very much larger extent out of savings or surplus. Time payment is used to a comparatively small degree and the buyer hesitates to obligate himself on so important a matter, unless the way is quite clear.

These are not the only differences to be observed in talking with motorists and retailers in England. The care which is bestowed upon the product in the buying is also carried into the maintenance of the car after it has been bought.

Appearance Presented

Driving along an English country road in the morning, you will notice very few of the cars exhibiting signs of travel and but an insignificant percentage indicate real neglect. In traveling from the north of England to London during the week-end of the Bank Holiday, when there are more motorists on the road than at any other time, very few of the vehicles exhibited dusty and dirty bodies or signs of neglect around the hood, the lamps or the windshield. It was not easy to notice an engine that required immediate attention or sounds which indicated other mechanical difficulties. Most of the cars gave evidence of careful attention by the owners and were as clean

as though they had been turned out for a parade that morning.

This condition, of course, is partly the result of the necessity of securing full returns from the investment in the car, at the least possible cost for repairs and service. It is not surprising to find that the service volume and the sale of parts and accessories does not reach the percentage which obtains in this country. It is true that the British buyer is just as inclined to add additional conveniences or comforts to his car, but he takes greater care of the vehicle, keeps it in better shape, thereby reducing the cost and the necessity for service and parts.

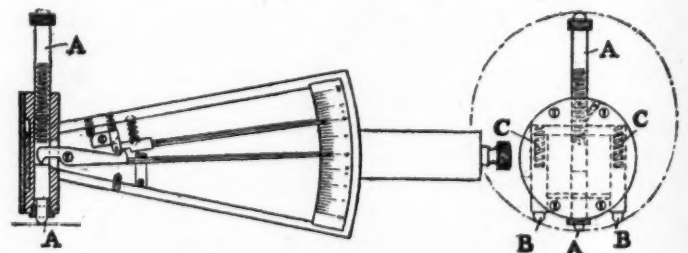
It is interesting to note under these conditions that there is a larger variation of the styles in British cars than in this country. Style variation forms a sales stimulus, just as it does here, although it does not have the extensive effect upon the use of old cars and the resale possibilities of old cars it has acquired with us. In some respects style is more important as a sales stimulus because it may immediately procure a reaction in a dull period. It does not, however, affect the value to the same extent or ramify through the industry as rapidly.

Casual observation of the methods of promotion and merchandising, adopted by American manufacturers in Great Britain, would lead to the conclusion that not sufficient attention had been paid to the more careful scrutiny and interest of the British buyer. In general the information included in these promotion and merchandising efforts was not sufficiently definite and did not cover in sufficient detail the suitability and value of the product.

Motorists with whom I talked seemed to be under false impressions of the cost of operation, the probable requirements in repair and service and similar matters which were not in accordance with the actual conditions, and which could have been dissipated by promotion matter properly worked out to deal with these various points.

The market in Great Britain is undoubtedly one of the large markets for American cars for a number of years to come, and the methods of merchandising should be carefully worked out with a view to meeting the needs of the British owner and not in accordance with our general requirements in this country.

Johansson Improves Cylinder Gage



Johansson's new cylinder gage

A NOVEL cylinder gage or gage for cylindrical holes has been patented by C. E. Johansson of Eskilstuna, Sweden. In gaging internal cylindrical measurements the difficulty comes in getting the feeder points absolutely on a diameter and Johansson provides means for making this possible or facilitating it.

In the drawing the measuring points are marked A, A and on both sides of them there are plungers B, B. These plungers are pressed outward by springs C, C, which are considerably stronger than the spring which actuates the measuring points. Consequently they move the instrument until it is in such a position that the measuring points are on a diameter.

Just Among Ourselves

Design Changes Appear According to Schedule

NEW models continue to come. Every week brings one or more announcements, and the output probably will continue until show time in January. Most of the predictions about trends made early in the year have been carried out. Eight-inline engines already have been announced on several cars, and at least one more of importance—Hupmobile—is scheduled before the New York Show. Transmissions changes did not materialize to as great an extent as had been anticipated, but steering gear revisions to take care of balloon tires have been common. Another new bus engine will be out soon, and important changes in body design are to be expected in the lines built by one large producer.

Logic, as It Grows in Princeton, Ky.

REPORT comes from the little town of Princeton, Ky., that all vehicles, including automobiles and baby buggies, have been barred from the streets after 10 p. m. The reason for this astounding regulation is that desperadoes operating with dynamite have been active in this region and are believed to have escaped in automobiles in most instances. One would have to search a long ways to find a better example of illogical reasoning. It reminds one of nothing so much as the man who, when asked for a sure cure for catarrh, blithely replied: "Cut your throat." Which suggests that a good way to prevent the forging of checks would be to abolish banks.

Paris Show Gives First Line on New European Jobs

ADVANCE reports indicate that Italian factories have in process a good many new designs at the present time, but that few of them were ready for

exhibition at the Paris show this week. Undoubtedly there will be some interesting jobs shown for the first time at the Paris exhibit, but there are indications that the number of mechanical novelties will be less than at the last two shows.

When Every Man Rides Like a King

IF anybody doubts the increasing comfort and convenience of the modern automobile he has only to compare the moderate-priced car of today with the expensive car of yesterday. Closed cars selling between \$1,500 and \$2,500 today have equipment in the way of window lifters, bumpers, spot lights, mirrors, vanity cases, flower vases and conveniently operated dome lights which were used only on the luxurious cars of ten years back. The average automobilist of 1924 travels in comfort which was available only to the rich a few years ago. The makers of high-priced cars still have many features of design and construction in their products which would be impossible at lower price, but so far as number and variety of accessories and equipment are concerned, many middle-priced producers seem to have gone almost as far as their fellow manufacturers, who are appealing to more expensive tastes and pocketbooks.

"Wets" and "Drys" in Fuel Mixture Debate

THE "wets" and the "drys" seem to be arguing within the automotive industry as well as in the nation at large. Far be it from us to express any opinion about the discussion of "wet" and "dry" mixtures which again is gaining attention through the activities of advocates of the latter type. Having read through the recent literature on the subject, however, we dare say more than one engineer is registering interest.

Every Visitor Takes Something from the Plant

EVERYBODY who goes into a manufacturing plant comes away with some sort of impression of the organization and its personnel. Usually the visitor conveys his impressions to a number of people either casually or by design. A large proportion of visitors see only superficial things, but that does not stop them from forming and hanging on to definite ideas about the whole works. From two things probably more than any others guests are likely to make hasty estimates; the reception desk and the bulletin boards. Literally thousands of dollars have poured out of manufacturing plants through the mouths of discourteous or "up-stage" men and women at reception desks. Courteousness and warmth of personality are greatly to be desired attributes in the man who greets callers. Bulletin boards may impress in two ways—by their general appearance and by the character of the notices posted. The sloppy, unkempt board, with notices dating back for many months, cannot fail to make one wonder if the same sort of neglect is involved in other records and operations. Then, the tone used in announcements to employees often seems to reveal the real feeling of the company toward the men who work for it. Some notices announce a holiday in such a way as to take all the joy out of the occasion; others state unpleasant facts with a sincerity and kindness that takes away much of the sting. The visitor often judges the entire policy and method of a plant by a few superficial things; often because he feels that these small, unconscious expressions of plant personality offer a more nearly true guide to the real spirit behind the organization than do some other more important, but more studied, actions.

N. G. S.

Laboratory Tests Show Effects of Different Fuels and Oils on Engine Performance

Dynamometer laboratory of The Texas Co. in Long Island City given over to research on performance and engine wear. Simple control maintained for complex equipment. Industry benefits.

WHAT qualities should the best lubricant for automotive engines have?

What determines the rate of wear and what can be done to minimize it?

How much oil is needed for proper lubrication, at what pressure should it be fed and what factors determine the rate of consumption?

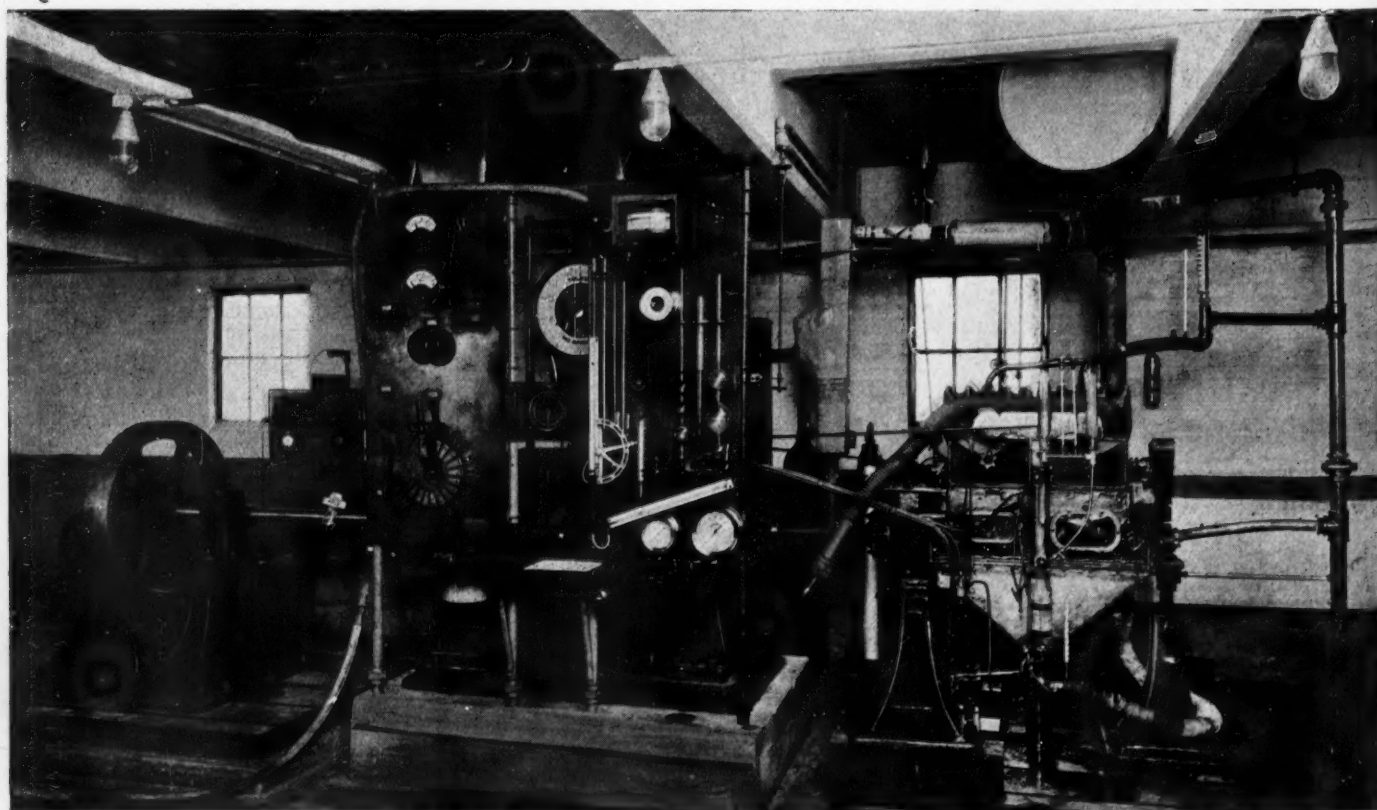
Answers to these and many other questions in which the performance of automotive engines and its relation to lubrication are involved are being sought through research work in the dynamometer laboratory of The Texas Company in Long Island City. Somewhat similar work in relation to fuels of differing character and their effect on engine performance also is being carried forward for the benefit of consumers as well as that of The Texas Co. and incidentally of the industry as a whole.

Results of some of this work already have been published in these columns—a part of them in the form of papers presented before the Society of Automotive Engineers. While data secured in tests of this character are of great value, considerable interest also attaches to the nature and arrangement of testing equipment employed, for the first cost of such equipment is a large item

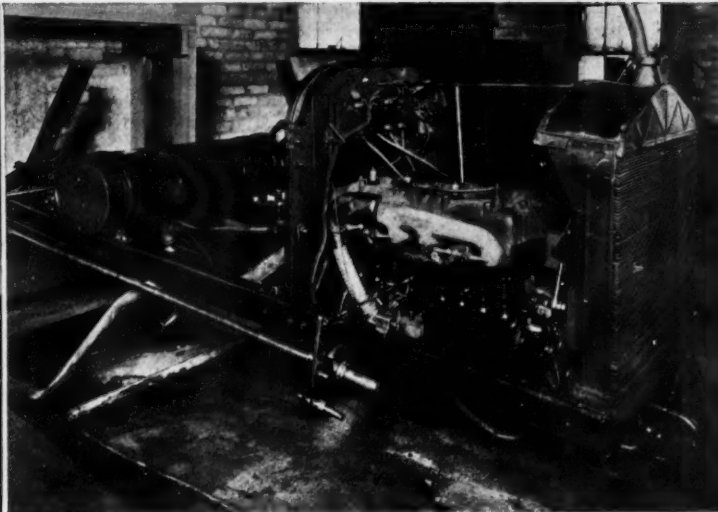
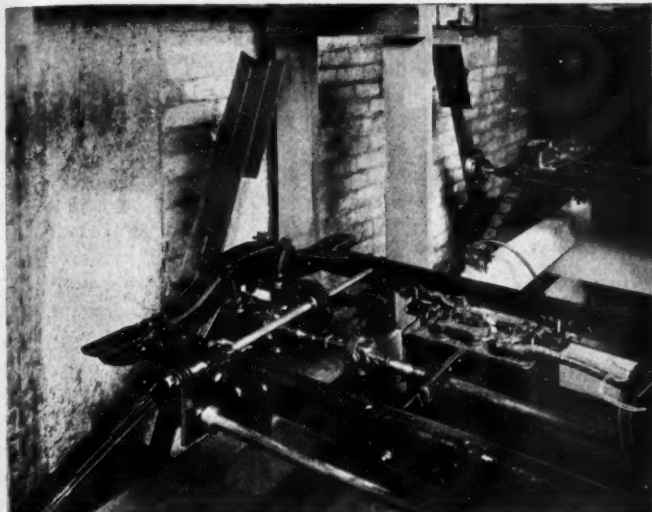
and the cost of its operation is considerable, so that it is of great importance that it be used efficiently, with minimum labor cost in relation to the work turned out.

Dynamometer equipment used in The Texas Co. laboratory incorporates some unusual features and is noteworthy in respect to its arrangement for convenience in operation. As will be seen from the accompanying cut of the dynamometer setup, all controls are located on panels at one side of the dynamometer so that one operator can handle the equipment and also make all of the necessary observations without leaving his station except to read certain thermometers. If the latter were of the distant type, the entire test could be run without leaving the control board, but with the present setup only one man is required for rather complicated tests which in many laboratories would require an operator and one or two observers.

Power is measured by the use of a Sprague electric dynamometer which is mounted on a concrete base between two bedplates on either of which an engine can be set up. The drive is taken through a pair of fabric disk joints connected by a short shaft. Power developed by the electric dynamometer is dissipated in resistance grids



Arrangement of dynamometer and auxiliary apparatus in laboratory of The Texas Co. Note central location of controls and practically all measuring instruments



Views of front and rear ends of Ford chassis and fan dynamometer equipment used by Texas Co. in tests calculated to determine rate of cylinder wear with different lubricants. Gearing used to open and close throttle in regular cycles is seen clearly

mounted on the ceiling under a roof ventilator. The usual controls for the dynamometer are mounted on the panel beside the left end of the dynamometer.

Space Allows for Readings

Between this panel and a similar one adjacent to the other end of the dynamometer is a space which enables an observer, standing opposite the center of the machine to take torque readings from the Toledo scales which are hung from a pipe frame on the farther side of the dynamometer. Speed readings are taken from an Elgin (Van Sicklen) chronometric tachometer mounted in the space between the two panels and driven by a flexible shaft from gears at one end of the dynamometer.

This instrument in reality counts the number of revolutions of the armature shaft each second and then indicates the average speed during this second. Since it contains its own chronometer it obviates the use of a stop watch and separate counter for speed measurements and is a most convenient instrument for an application of this character. It also facilitates acceleration readings, since it holds each reading for one second and then resets. Each consecutive reading during acceleration gives the average speed during the preceding second.

On the panel to the right of the tachometer is mounted a quadrant for spark and throttle control, pressure gages for measuring oil pressure, manometers for measurement of manifold depression and exhaust back pressure, a thermometer for room temperature measurement, fuel tanks and a set of fuel pipetts. Adjacent to the panel is a handle for adjusting the valve which admits cold water to the tank through which the jacket water is circulated. This valve controls the temperature of the water reaching the jacket.

Below this handle is another quadrant over which moves a lever attached to a rod running to two interconnected butterfly throttle valves so arranged as to control the flow of air entering the carbureter. These throttle valves are fitted into two pipes, one of which conveys cool air direct from a point above the roof of the building, while the other carries air from the same inlet through a jacket formed by a metal box surrounding a part of the exhaust line. These two pipes are brought together at a point adjacent to the carbureter.

The butterfly valves are so arranged that, as one opens, the other closes and vice versa, so that all or a part of the air can be shunted through the heater and in consequence

the temperature of the air entering the carbureter is raised to the desired point.

Lagging is used to cover the box surrounding the exhaust heater, so that the heat delivered to the air passing through will be conserved. The box measures about 6 in. square in section and is about 4 ft. long with 2-in. standard pipe fittings near the top and bottom. The exhaust pipe passing through the box also is a 2-in. standard size. With this simple heating arrangement it is possible to raise the temperature of the air entering the carbureter to almost any desired temperature and to maintain that temperature substantially constant.

A calibrated orifice in a box at the air inlet, in combination with an inclined draft gage, permits of measuring air consumption when desired.

By taking the fresh air supply from outside the building it is possible also to simulate cold weather operating conditions during winter months. Drop in pressure in the inlet manifold is the gage used in making initial throttle settings when duplicate load conditions are to be maintained in successive runs. Of course, suitable corrections for changes in barometer are applied in making comparisons in which such change has a material bearing upon results. Traps for collecting condensed water vapor are introduced in the inlet vacuum and exhaust pressure manometer lines.

Fuel Measured by Volume

Measurement of fuel by volume instead of by weight has been found to be much the more convenient method, especially when comparatively short runs are involved. The pipetts used for this purpose are glass tubes in which are blown bulbs having, in one case, 0.1, 0.1 and 0.3 pt. capacity, respectively, and in the other, 0.5 and 1.5 pt. respectively. This permits of reading accurately, amounts from 0.1 pt. to one quart in steps of 0.1 pt. if desired.

All pipetts are controlled by cocks, some of which are three-way, and are connected to five-gallon gravity tanks mounted on the back of the panel. When test conditions become constant, readings are taken by noting the time which elapses between the instant at which the level of the fuel passes a mark on one of the necked portions of the pipett and the instant at which it passes another such mark. Since the necked portions of the pipetts are of small section the flow of fuel as the level reaches such a section is relatively rapid and it is an easy matter to secure an accurate timing over the consumption period.

A convenient and accurate method of determining the spark advance is employed. Mounted on an insulated base adjacent to and concentric with the flywheel of the engine in a brass quadrant or sector marked off in degrees from 0 to 40. The pointed end of a metal bar attached to and turning with the crankshaft of the engine is so mounted as to follow the arc of this sector closely but not touch it. The four alternate contacts on an eight-cylinder magneto used to fire the four-cylinder engine under test are connected together and to a high tension lead running to the brass sector.

Measuring Spark Advance

As the distributor brush passes each of these alternate contacts a spark passes from the sector to the rotating bar and thence to ground, jumping the gap between the bar and the sector. The angular distance between the point at which the spark jumps and the dead center position is read off and is the measure of the spark advance at the time the reading is taken.

For convenience in studying various lubricating problems provision is made for driving the oil pump of the engine under test at any desired speed in reference to the engine speed, in order to determine the effect of change in rate of oil supply. This is accomplished by removing or disconnecting the engine oil pump from the crankcase and driving it through a system of change gears of any desired ratio.

When conditions calculated to stimulate car accelerations on the road are desired, the dynamometer armature is coupled direct to a flywheel mounted between bearings on a second bedplate. This flywheel is about 30 in. in diameter and has a rim about 6 in. wide by 2 in. thick so that its inertia is quite large as compared to that of the armature only.

A portable bridge crane having a span slightly greater than the width of the bedplates and equipped with a chain hoist and roller bearing casters has been found of considerable convenience in handling the flywheel and various engines to be mounted on the bedplates for test. With a bedplate at each end of the dynamometer it is possible to set up one engine and prepare it for test, while one at the other end is being tested.

Engine Used in Tests

In addition to making tests using the dynamometer equipment described above, the laboratory undertakes tests of a somewhat different character on separate stands located in another part of the building. One such stand is illustrated in accompanying cuts, from which it will be seen that the apparatus consists of a Ford chassis minus its running gear but mounted upon its own springs attached to suitable base timbers.

In place of the rear axle pinion shaft there is substituted a stub shaft mounted in roller bearings carried in a bracket attached to the chassis frame. The propeller shaft is coupled to one end of this short shaft, while at the other end is mounted a simple and inexpensive fan made from angle iron and steel plates. Geared to the stub shaft is a cross shaft which in turn drives a third shaft through worm gearing. This third shaft is carried in bearings attached to the side rails of the frame and runs parallel to these rails.

At its forward end is a sector shaped cam against the edge of which bears a pin carried by a lever pivoted somewhat below the cam center. This lever pin is held against the cam by a tension spring, and the layout is such that the lever oscillates under influence of cam and spring, carrying with it a rod one end of which is attached to the oscillating lever and the other to the throttle lever of the carbureter.

This simple mechanism is employed to apply a load to the Ford engine under test and to cause the speed to vary as the throttle is opened and closed. The cam is so designed that the engine runs idle about half the time, is suddenly accelerated to a speed equivalent to some 20 or 22 m.p.h. in road operation, held wide open for a short period, about equal in length to the idling period, after which the throttle is closed slowly, completing the cycle.

This cycle is repeated hour after hour automatically. During each cycle the engine makes about 1000 revolutions, its average speed being equivalent to an average road speed of about 15 m.p.h. Roughly speaking, each cycle is thought to be about the same as that encountered in a traffic stream such that cars idle for short periods, rapidly accelerate to some 20 m.p.h. and then are brought to a stop, to idle and accelerate again as before.

During this test the engine is cooled by its own fan and radiator with the addition at the top of the radiator of as much cold water as may be required to maintain the desired temperature. Lubricant is circulated and fuel fed as in normal service, but a careful record of the consumption of each is maintained. The number of cycles through which the engine passes is recorded on a counter actuated by a finger on the throttle rod. Once standard operating conditions are secured, the observer need give the apparatus attention only at long intervals, so that, for the bulk of the time, the test "runs itself."

Measure of Change in Power

Since the load is controlled by a fan of fixed size, the number of cycles per hour is the same for a given set of conditions. If the number of cycles per hour varies materially, this is taken to indicate a change in power output which is due to differences in internal friction of the lubricant. Tests are made alternately with some reference oil and the particular oil to be investigated so that allowance can be made for change in condition of engine if any occurs.

In these tests the particular information sought is the rate of ring and cylinder wear, rate of oil consumption and amount of carbon formation as between different oils. At the end of each period equivalent to 500 miles of operation, the cylinder head is removed, pistons and rings taken out, carbon carefully scraped for weighing and analysis, loss in weight of piston rings is noted by careful weighing on delicate chemical balances, valves touched up if required and engine reassembled.

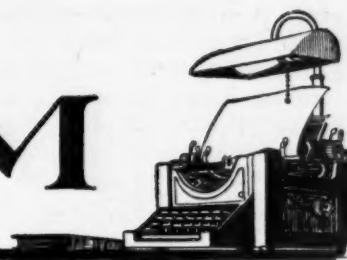
Loss in weight of rings is taken as a measure of cylinder and ring wear and already this form of test has resulted in securing much valuable information. Incidentally, it has been found that the character of the oil blend has a material effect upon wear. Differences as great as 2 to 1 have been found as a result of changes in blending so slight as to have no appreciable effect upon the specification for the oil.

Thus it will be seen that an apparatus which is relatively inexpensive both in first cost and in operation has been made to yield results of very great value.

A METHOD of welding aluminum by means of the metal spraying process is described in *Der Motorwagen* by Robert Hopfelt of Altona. It is applicable to repair work on broken crankcases, for instance, and has the advantages that it requires practically no skill and that no flux is required, only the pure aluminum. Before the metal is sprayed onto the joint of the broken part, the edges to be welded must be pre-heated, and if the metal wall is comparatively thick the heating must be repeated once or twice. A joint made by this process is claimed to be as strong as the cast aluminum itself, and no warping or deformation of the parts takes place.



The FORUM



Wide Use of One-Piece Windshield Predicted

Reader criticises some designs and suggests improvements. Says it is possible to use fixed type and still have perfect ventilation.

Editor, AUTOMOTIVE INDUSTRIES:

The article entitled "Many Faults Are Found in Present Day Windshield Designs" in your issue of July 24, is very interesting and correct as to the progress and development of the automobile windshield, but there are several details of modern design which have escaped the writer's observation.

There is talk in the automobile industry of eliminating the mechanically operated shield, but no one has as yet adopted a fixed type. In the writer's opinion another year will see the one-piece, fixed windshield in use by a great many manufacturers.

One of the new windshields, which has a one-piece glass

and lifts by mechanical device to afford an opening of about three inches is in the writer's estimation a very poor attempt at a one-piece shield. In the first place, engineers found out a long time ago that you could not force air into a closed body, or even into an open body with the curtains up, through a small slot with the opening back of the instrument board, as is in the design referred to. Air in a closed car cannot be expelled by the slight pressure exerted through these small openings. This was tried several years ago by a prominent car manufacturer and found a flat failure. I have ridden behind the new shield and find that it is practically the same.

In the second place, the lifting of the windshield to

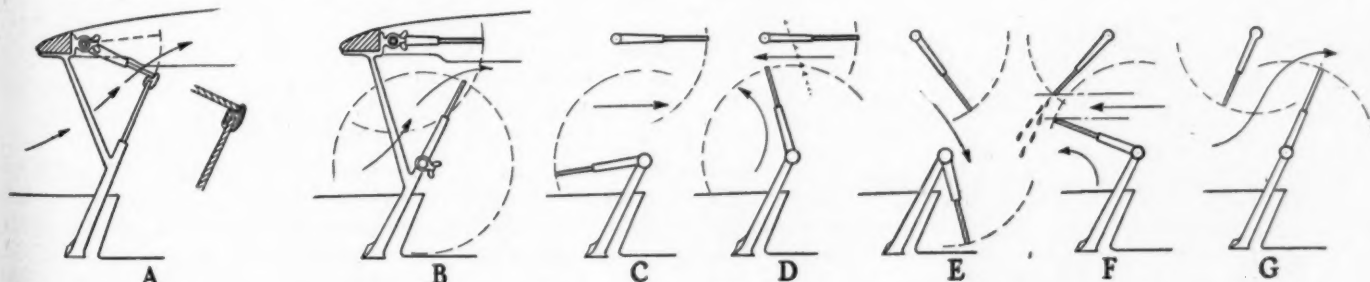
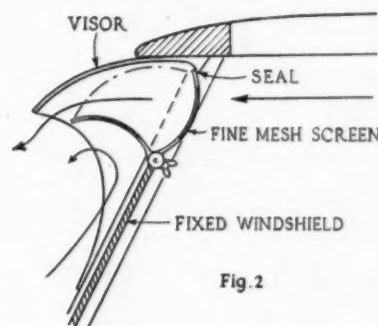
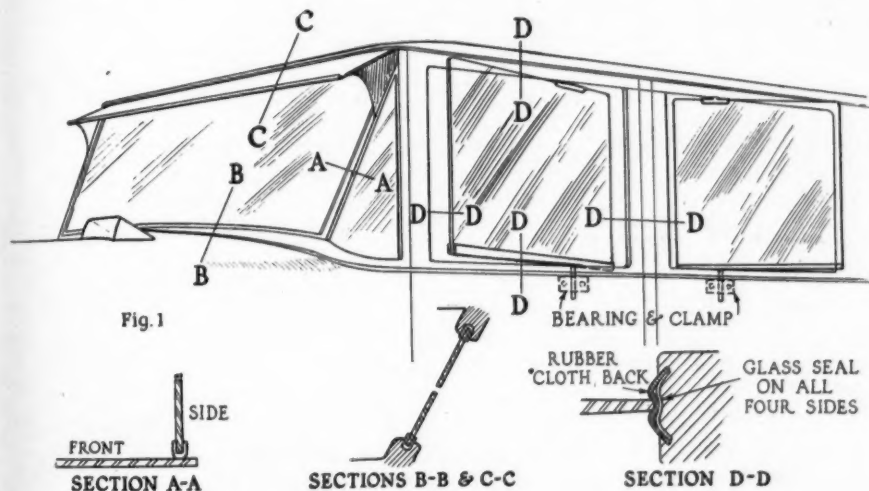


Fig. 1—Sketch showing approximate construction employed in experiments of Heinie-Velox Co. Windshield is fixed, while glasses in doors are pivoted on vertical axes. Fig. 2—One of two patented designs of E. W. Goodwin. When the curved vent is closed it is said to afford good ventilation, and when turned forward to draw out of the body air which enters via the cowl ventilator. Fig. 3—Second Goodwin design of windshield with overhead vent in various positions. Arrows show direction of air flow. Sketch A is for use with a fixed shield, while B & G inclusive are for a shield with the glass hinged. F is the rain vision position in which the outward current of air prevents entry of rain and keeps body ventilated. For further ventilation the shield can be set in position G

three or four inches above the bottom windshield frame results in a direct blast of air, right on the chests of the riders in the front seat. This is impossible.

The Heinie-Velox Co. of San Francisco, Cal., have experimented with a ventilating window, using a solid, sloping one-piece glass windshield somewhat along the lines shown in Fig. 1. This arrangement is wonderful to ride behind. There are absolutely no obstructions to your vision and with the possible exception of one or two days of the year, when there is freezing sleet, there is absolutely no objection to this arrangement. The side windows of the car are pivoted and a two-inch opening will scoop in enough air to ventilate the body perfectly under all conditions during all seasons of the year.

Another interesting design is that known as the Hubbard "ventilating eaves," manufactured by the Hubbard Products Co., Kokomo, Ind. These eaves can be attached to any automobile without any preliminary provisions or alterations, and absolutely ventilate a car perfectly with a solid windshield of any type desired.

The writer, personally, has experimented with solid front cars with wonderful results. On the average sedan and touring car there are several inches at the top of the glass which are of absolutely no use as far as vision is concerned, the vision being cut off by the visor and the extending front or room of the car. This permits the use of this space for a ventilator, and ventilating by this method is powerful and very effective. The writer is enclosing sketches of two very effective windshields which he has constructed and on which he has applied for patents. (See Figs. 2 and 3.)

The article by Herbert Chase in your Aug. 14 issue, is interesting in every detail, especially when he comes to the comfortable seat suggested on page 317.

E. W. GOODWIN, *Consulting Engineer,*
Union Seat Company of America.

Editor, AUTOMOTIVE INDUSTRIES:

There have been many discussions for and against automobile racing. These discussions have not always agreed that the money and time put into racing have been worth while. However, many, if not all will admit that there have been some meritorious designs developed from racing.

There has been considerable research on air cooled engines for automotive work. Some who have had broad experience with air cooling are "sold" on this method of cooling. I would like to suggest that the authorities at Indianapolis and elsewhere have a special division or class for cars with air cooled engines and that the air cooled cars be given an advantage either in piston displacement, or in speed or otherwise.

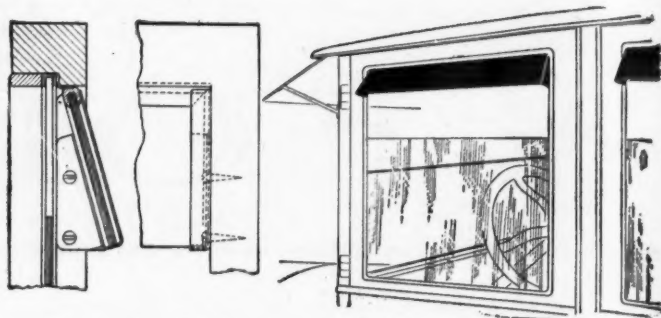
I believe this might be an incentive to engineers and though I have not been connected with an organization using this type of engine I think many would like to see it developed more highly.

JAMES S. HENRY,
Springfield, Ohio.

Window Eaves Aid Ventilation

VENTILATION of closed cars without entrance of rain is said to be made possible by use of devices termed Hubbard Ventilating Eaves manufactured by the Hubbard Products Co. of Kokomo, Ind. As shown by the accompanying cut, these eaves are visor-shaped stampings designed to fit door and window openings without interfering with operation of the windows.

When in place they prevent rain from entering the windows when the latter are partly opened and also tend to prevent rain from reaching the glass, especially the



Hubbard ventilating eaves. Sectional view shows glass type, while pressed metal type is shown in sketch

upper portion thereof, and thus are an aid to clear vision. Other advantages claimed are those incident to good ventilation, which is said to be secured at all times without disagreeable drafts.

These eaves are installed in pairs, preferably one on each front door. They are said to be desirable at all window openings, however. They are easily installed, since they require but two wood screws at each side to hold them in place. One type is made in glass with a rubber channel at the top, as shown in the cut. Both types are said to add to the appearance of the car. They should prove especially desirable when employed in connection with one-piece fixed windshields.

EDWARD T. BIRDSALL has written us a characteristic letter in which he complains that, although most of the things we have heard recently about pollution and dilution of engine oil and rapid wear of engine parts are true, he doubts whether car users as a class are much interested. Even engineers, he says, fail to comprehend the facts, barring a very few.

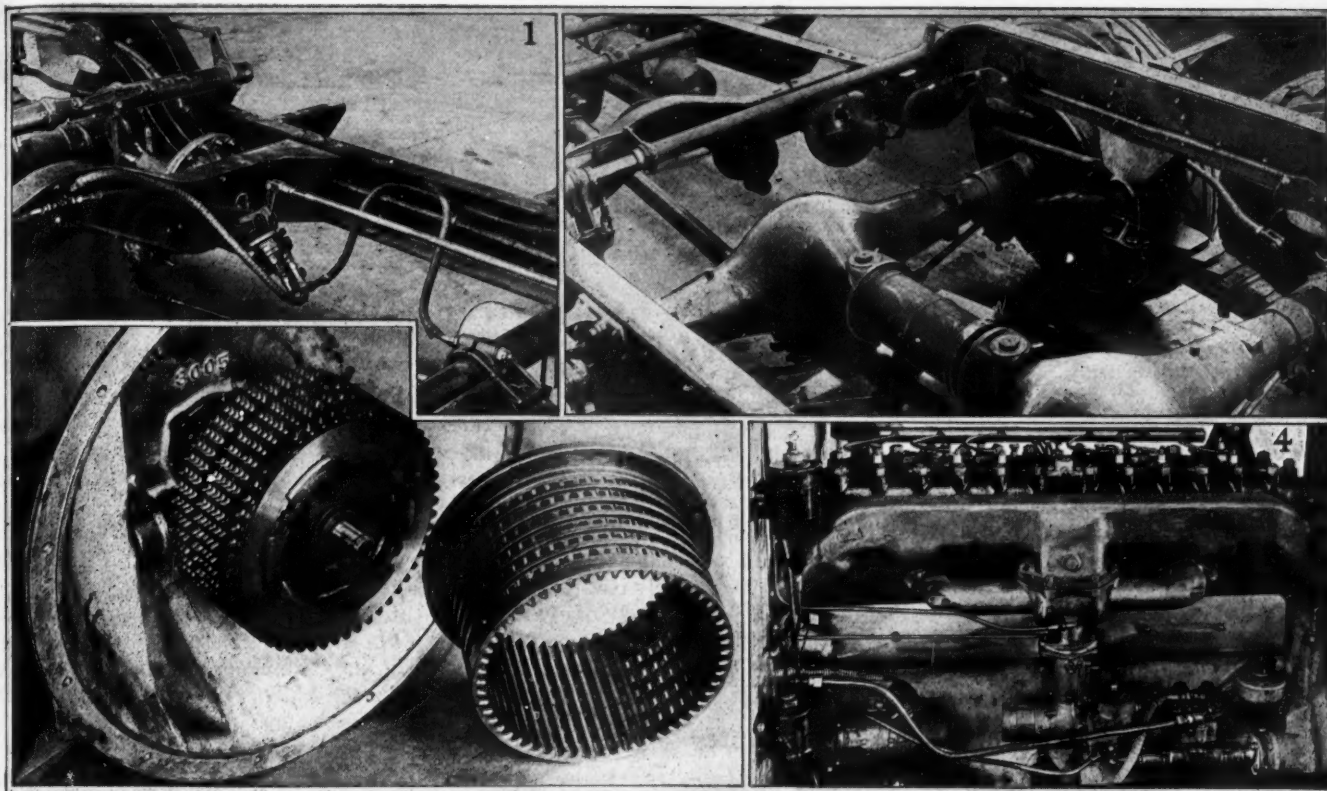
While we don't agree entirely with Mr. Birdsall (we doubt if he really expected we would), we appreciate his point of view. Sometimes it certainly does take an awful lot of hammering to drive home facts which ought to be evident enough and put to good use immediately they are set forth. Human nature just doesn't work that way. That is why publications interested in "reforms" or advancement along certain lines find it necessary to repeat the same truths time and again.

Among the things Mr. Birdsall points out are that use of electrically heated primers has reduced oil dilution about 50 per cent, that use of finely divided graphite in engine oil creates a coating on the cylinders which prevents wear during the starting period when oil may not be present on the cylinder walls, that use of a floating wristpin practically eliminates wear on the pin, and that castor oil is a good lubricant for certain purposes.

All of these items are interesting though not new. Some of them may be open to question or involve disadvantages not offset by greater advantages. We are glad, however, to bring them before our readers and hope they may profit by what our correspondent says.

THE following statement is contained in a letter written by L. Coatalen, designer of the Sunbeam racing cars which participated in the recent Grand Prix.

"In all the reports of the race for the Grand Prix d'Europe which I have seen it has been stated that the Sunbeam cars suffered from spark plug trouble. I should like in justice to the K.L.G. plugs which have so long been used with success on Sunbeam racing cars to point out that these statements are incorrect and that what occurred to these plugs was not the cause of trouble at all, but simply the effect of another agency."



(1) View of the rear portion of chassis showing Westinghouse air control valve and pressure diaphragm. The valve is operated by a bellcrank and rod connected to the brake pedal. (2) Another rear portion of chassis, showing double-axle unit, reinforced kickup in frame and mounting of air cylinder and one of the Westinghouse air brake diaphragms which operate the six-wheel Lockheed brake system. (3) Clutch and ventilated clutch drum. (4) Part of right side of the Continental six-cylinder engine, showing two-cylinder air compressor driven off the timing gears. Air is drawn through the filter mounted on the dash

New Six-Wheel, Double-Deck Bus Brakes on All Wheels

*Latest product of Moreland plant is designed to seat sixty.
Is conventional in most features but has steel frame
body and air operated hydraulic brakes.*

ANOTHER addition to the growing list of six-wheel buses being marketed in this country has just been announced by the Moreland Motor Truck Co. of Los Angeles, Cal. In this case the vehicle is a double-deck type seating a total of 60 passengers and having a wheelbase of 204 in. measured to the center of the springs connecting the two rear axles.

Among the novel features is the use of air-operated Lockheed hydraulic brakes applied to all six wheels, and of a low hung body in which the entire frame is of metal, largely steel with cast aluminum brackets. Air for brake operation is supplied by a small two-cylinder compressor driven off the timing gears of the Continental $4\frac{1}{2} \times 5\frac{3}{4}$ -in. six-cylinder engine.

Aside from the double Timken axle unit in the rear, which is similar to those employed in other six-wheelers licensed under Goodyear patents, and the brake system mentioned above, the chassis is built along more or less conventional lines. The frame has the usual channel side members and is widened and kicked up at the rear. Floor height is given as 25 in.

Suspended beside the gearset, which is a three-speed unit mounted amidship and has side by side shafts, are two air receivers, into which the compressor discharges. From these the air flows to two Westinghouse diaphragms passing through a pedal-operated control valve. The plungers of the diaphragms are connected to the pistons of the hydraulic brake system, and since the diaphragms have about ten times the area of the pistons, the pressure on the oil is multiplied accordingly. The total pressure at the brake shoes is said to be about 1200 lb. when the air pressure is only 75 lb. per sq. in.

All brakes are internal expanding types, those controlled by the emergency hand brake lever being arranged to operate only on the four rear wheel drums. The hand brakes are equalized by the conventional equalizer bar, while the foot brakes are inherently equalized by air and hydraulic pressure. Since the three hydraulic brakes on one side of the chassis are connected to the same pipe and the three on the other to another pipe, breakage of either pipe will not affect operation of the brakes connected to the other pipe.

All suspension springs are of the semi-elliptic type, those at the rear being attached to the frame at the center and attached at each end to the axles by pins without shackles. Rear springs are 42 in. long and 4 in. wide.

Drive from the engine is by multiple-disk clutch in which the driving disks are made entirely of asbestos composition instead of being of steel with composition facings. The clutch is inclosed by an aluminum cover which can be removed easily if adjustments are required, while the entire clutch can be taken out after simply removing the cover and disconnecting the universal. The clutch drum, which is bolted to the flywheel, is lightened considerably by cutting circumferential grooves in the drum surface down to the level of the roots of the internal gear teeth, which mesh with similar teeth cut in the clutch disks.

Unlike most bell housings, that used in this case is not cast integral with the crankcase of the engine, but is made in a separate piece and bolted on, so that, in case of breakage of one casting it is not necessary to replace the other.

As indicated above the axles are Timken products, those in the rear being semi-floating types with under-slung worms giving 6 to 1 ratio. These axles are joined by a telescoping torque member, the ends of which are pivoted to the axles. Wheels are of the disk type and carry 36 x 8-in. pneumatic tires.

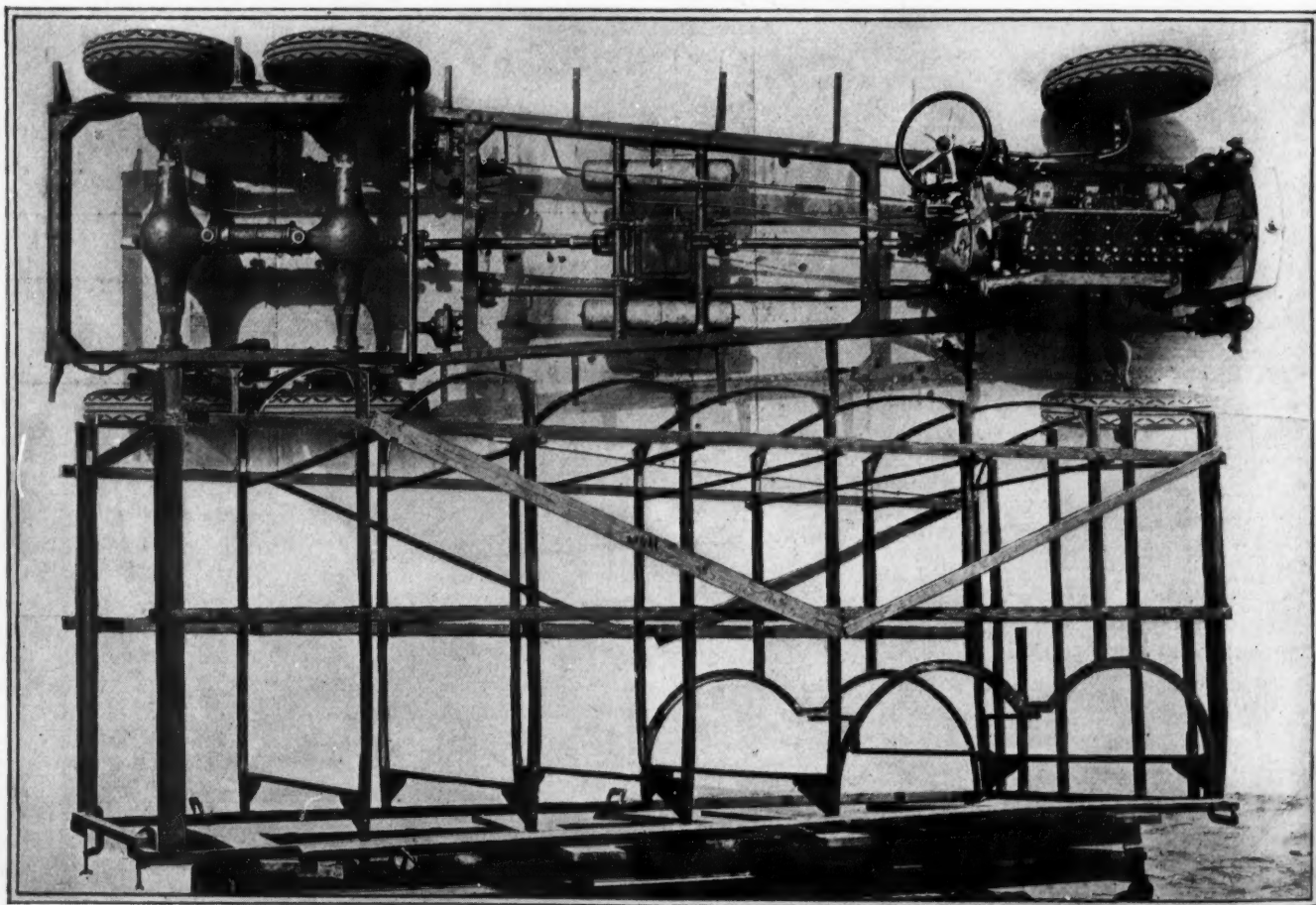


Moreland double-deck six-wheel bus, several of which have been ordered by the Los Angeles Railway

The electric system includes a 12-volt, 500-watt generator. There are twelve 21-c.p. lamps for illumination inside the body. Magneto ignition is employed.

Body frames are built up from pressed steel channel members joined by aluminum castings, as shown in one of the accompanying cuts. The roof, formed from Haskellite and wood slats, is arched and is 74 in. above the floor. The upper panels of the body are of sheet aluminum, but the lower panels are of Plymetal, while other parts are of Haskellite. Very little wood is employed aside from that used in the floor, panels and roof.

The body proper does not overhang the chassis frame, nor does the latter extend but a few inches beyond the rear wheel.



Plan view of the chassis of the new Moreland six-wheel bus and portion of pressed steel body frame in process of construction. The angle brackets at the top and bottom corners are aluminum castings

~ Editorial ~

Swiss Insurance Experience

ON other pages of this issue W. F. Bradley gives a detailed account of how compulsory liability insurance is working out in Switzerland. He made a special study of the situation for AUTOMOTIVE INDUSTRIES and spent some time in Switzerland gathering information and impressions. His conclusion is that compulsory insurance over there has worked out quite satisfactorily and that it has met with the approval of the automotive industry as well as the public. The results of his investigations should be read carefully by automotive executives because of the growing interest in this type of legislation in the United States.

In analyzing the results of Swiss experience, however, the difference in conditions between Switzerland and the United States must be fully recognized. The general European attitude toward public regulation is somewhat different than in this country, and the character of automotive development in Switzerland and the United States is far from similar. A law may work out quite differently in practical operation when applied to 30,000 operators than it would when applied to over a million as would be necessary in several of our States. The experience of Switzerland undoubtedly is of value in estimating the probable results which would accrue from institutions of similar legislation over here. The surrounding factors should be considered carefully, however, before the industry makes a decision on this important question. Number of automobiles, area of territories covered, difficulties of administration and other similar items all have a bearing on the success or failure of the plan.

Bus Taxes

THE problem of truck and bus taxation probably will not be solved entirely for a good many years to come. The interests involved in the making of taxes are so complex and their objectives so varied that a common goal will be difficult to reach. Progress is being made every year, however, toward the institution of levies which have in them greater elements of fairness to all concerned.

In a recent discussion of the old point about the responsibility of the bus in paying for the highway over which it runs, F. R. Fageol made one very pertinent point which seems to be in line with sound economic reasoning. He said:

"Unfortunately a great many people have been influenced to believe that the motor bus does not pay anything like a fair proportion of taxes. You will hear people say, 'Why, the state builds them a road to run on and they do not pay anything for the use of it.' Such a statement is only partly true. The real truth is that the bus operator does not charge his

passengers anything for the use of this highway. Therefore, how can he pay for something he does not charge for?

"A motor bus operator really charges for the vehicle, its depreciation, its tires, its gasoline, its mechanical maintenance, its drivers, the men who serve in the waiting rooms, in the shops, and for general management, and I have yet to analyze a motor bus operator's statement wherein he showed as an operating cost item a figure to cover cost of the highways over which he operates, except the entry to cover taxes."

Pioneers

THE path of the writer of scientific and industrial history, like that of the general historian, is beset with pitfalls, and in giving credit for the invention of this or that device one cannot be too careful with regard to the facts. In general history we have the case of the discovery of America, for which claims are being pressed on behalf of several explorers, and it has been facetiously suggested that in order to handle the subject in such a way as to be immune to successful attack, the narrative of Columbus' exploit should be introduced in this fashion: "When Columbus discovered what he discovered, in 1492 or thereabouts * * *"

The invention of the airplane we are accustomed to credit to the Wright brothers. Their claim might also be attacked, because it can hardly be denied that airplanes were designed and launched before the time of the Wrights' experiments at Kitty Hawk. It is true that none of these earlier planes did any flying worth speaking of, as they all lacked the missing link supplied by the Wrights—the warping wing or aileron, which enabled the pilot to keep his machine on an even keel. It was this contribution of the Wrights that made the airplane a practical contrivance, and the world is inclined to shower laurels on the man who achieves practical results and to forget those who fail to achieve complete success.

We have several examples of the same kind in automobile history. Components or attachments which eventually came into general use were first conceived by one man who, either because of lack of time or the necessary facilities, or for other reasons, failed to reduce his invention to practice; then along came another man who supplied the one element lacking to success, and he reaped all the reward.

The path of the pioneer is proverbially a hard one, and his memories are often saddened by the reflection that he came so near to success without actually attaining it. Historians would do well to remember this and to give due credit to those who paved the way in industrial developments over which others followed on to success and glory and often to rich pecuniary reward.

Our Industry Today—

Plant Operations Better, Continuance Will Hinge on Continued Improvement Reported in Volume of Sales

NEW YORK, Sept. 29—Improvement in retail sales of automobiles, developing the latter part of the month, has brought about an upturn in manufacturing schedules that will keep major plants operating at a comparatively high level for some weeks. Continuance of high operations will hinge upon the ability of sales volume to remain at its present strength.

Confidence is being expressed in a rather steady movement of sales with no perceptible falling off at any time and no advance that would be in the nature of a spurt. With better retail automobile business coming the latter part of September, and not the first, the feeling is strong that this betterment will continue well into October.

Some indication of the buying interest of the public during the remaining months of the year is expected to come from the first local show of the season, which is being held in New York this week. While sales for the entire year in the metropolitan district have been above the total for a year ago, there was some lagging in August, the last month for which figures are available.

The present demand for cars, while not general throughout the country, was expected early in September, and its failure to develop at that time promised a curtailment of operations before the end of the month. While the demand is not abnormally large in any sense, it is so much more active than has been the case recently that it is justifying manufacturers in stepping up their programs beyond the point where they stood at the middle of the month.

Stocks at Minimum

Stocks are at a minimum with the majority of dealers in standard makes, and no manufactured stocks are in the hands of producers. Let-up in operations during the summer months permitted retailers to dispose of their accumulations without the necessity of taking any part of new output. As dealer stocks were lowered drawing was made on distributor stocks to meet immediate needs, and distributors, in turn, called on the warehoused stocks in manufacturers' hands.

No stepping-up in plant schedules was permitted until these warehoused stocks were cleaned up and manufacturers were brought to the point of making an advance in programs to meet the new condition. A slight swing toward increased operations started in July with more of a movement forward coming in August, which showed an approximate production gain of 15,000 cars over the preceding month.

Orders which producers are now receiving from dealers are in many instances pressing, and cars delivered will

pass immediately into the hands of consumers. None of the orders are for stocking purposes. Closed model demand is heavy, in some cases being in excess of factory output.

Political Situation Slows Farmer Sales

Detroit Somewhat Disappointed With September Production but Optimistic

DETROIT, Sept. 29—Preliminary figures on September output in this section will show a gain of about 2 per cent over the August totals, a gain that is somewhat under the expectations of executives who were looking forward to a marked increase over previous month's operations. Going into October, the industry as a whole will be operating at a rate about on a par with September operations, the developments of the month determining any change to be made in the production movement.

Ford Motor Co. production showed a gain of about 9000 vehicles in September over the August total, this representing an increase of about 6 per cent. None of the other companies showed marked changes in the percentage of the total business, proportion shares falling to each in about the same ratio as governing previous months.

Retail Outlook

Owing to the general shortage of cars in dealers' hands, there is considerable uncertainty among manufacturers as to production possibilities in the remaining months of the year. Ordinarily buying at retail would have shown important increases following Labor Day, but this did not develop so that there was no pressure on factories for cars.

The month's output reflects very closely the actual movement of cars at retail so that going into October the same shortage of cars in the field remains. If retail buying does not develop during October, manufacturers are confident that the later months of the year will show increases in proportion to the slowness of the usually strong fall months. The

business has to come, so manufacturers assert, but is being held back by uncertainties incidental to the political campaign. Farmers in most parts of the country already have sold their crops at good prices and have the money to buy, but are holding back.

There is some opinion that conditions in the automobile industry such as now is being experienced are due largely to the generally oversold condition in many parts of the country, and that not much change can be expected until 1925. Those holding this view, point to the situation in California, where crops have been sold for approximately half a billion, the money for which is now in farmers' hands. If cars were to be sold there they would be selling now, it is held, whereas business is slow. The reason that it is slow is held by some as due to the fact that practically everyone in California that can own a car already owns one, and that most of the cars are not more than one year old. To move new ones requires taking in practically new cars at high allowances and extending long credits on the rest of the price.

California Situation

It is next to impossible to move traded in cars without taking losses, and dealers are not able to stand the strain. What the situation in California needs, says this opinion, is a lay off on sales effort until the cars now owned have a chance to wear themselves down. Contrary opinion on the California situation claims losses due to cattle diseases and other causes as holding business back.

60 Per Cent Closed Cars in 1925, Cleveland Says

CLEVELAND, Sept. 29.—Some of the larger automobile manufacturers in this district are predicting that sales during the coming year will run 60 per cent closed models in the passenger lines. With this thought in mind attention is being given to the building of more attractive bodies for these cars.

Manufacturers believe that 1925 will be a year of unusual development in closed car body types. The bringing out of cars recently in the closed jobs, at prices relatively near those for the open models, will center further the public attention upon these all-year machines.

Body builders in this territory declare that the coming year will likely see many new features in this field, probably more radical than that introduced through the new Fisher window windshield.

The interesting thing at this time in the body building industry is that the improved employment conditions are relatively greater than the industry upon which it depends, that of the automobile manufacture.

Makers Increasing Orders for Steel

Big Price Drop in Automobile Sheets

Pittsburgh Surprised at Reduction of \$3 a Ton—New Sales Policy Adopted

PITTSBURGH, Sept. 29—A cut of \$3 a ton in the price of automobile sheets has come as a surprise to the trade, and least of all was it expected in the Pittsburgh district steel market. The new price on full-finished automobile sheets is 4.60c.

First action on a cut from the established price of 4.75c. was taken the early part of the week of Sept. 22 by two small independent producers in the Ohio district who made a cut of \$2 a ton to 4.65c. This was passed almost unnoticed in the trade, but toward the end of the week one of the largest producers of automobile sheets in the Ohio district cut its price \$3 a ton. At the end of the week, the American Sheet & Tin Plate Co. saw fit to meet this competition and made its price 4.60c.

The cut came at a time when, it is declared here, the automobile manufacturers and parts makers were increasing their orders for steel in general.

The American Sheet & Tin Plate Co. also announced its sales policy the latter part of the week in conformity with the decision of the United States Steel Corp. to abandon the practice of selling Pittsburgh plus. The only appreciable change was the naming of a price \$2 a ton higher on a Gary base, while the quotations in the Pittsburgh district remained unchanged.

Ohio Still Big Factor

A Gary base does not affect the automobile trade, for the leading interest does not manufacture high grade specialty sheets at the Gary plant. Therefore, automobile sheets will still come from the Pittsburgh and Ohio mills on a Pittsburgh base rate, although sales will be made on a delivered basis. However, the leading interest always has made its invoices to read Pittsburgh price plus freight from the Pittsburgh district, with the discount to be figured on the total amount of the bill.

It also is unlikely that there will be much of a saving to Detroit and South Bend automobile makers, for it is pointed out here, a total of 30 sheet and tin plate mills in this district take the so-called Pittsburgh freight rate, north, south, east and west. It is probable, however, that some Ohio producers, particularly the American Rolling Mill Co., might get into certain automobile centers on a lower freight rate than Pittsburgh.

All the details of the selling plan have not yet been worked out, but there is

one thing certain as a result of the abolition of the Pittsburgh base. Both steel makers and buyers will no longer be able to check up with other mills and consumers on prices being sold and paid and freight rates will become the greatest factor in the sale of steel.

In the sheet industry in particular, there is likely to be a multitude of complaints regarding freight rates to the Interstate Commerce Commission, especially on short hauls.

Baltimore's Fall Outlook

BALTIMORE, Oct. 1—From sources in the closest touch with the trade in general, it is reported that the present fall business is not as good as it was during the corresponding season of last year, but the outlook is for a better demand in the near future.

The used car situation is much like the conditions prevailing in the new car end of the business. Most dealers move their stocks of used cars in good shape.

The Week in the Industry

THE automobile show season opened last week with the Closed Car Show, put on by New York dealers. It was a good exhibit but the attendance didn't come up to expectations. Drawing for space in the big New York and Chicago shows took place Thursday at the N. A. C. C. headquarters.

Production for September was below August by only a very small percentage, but business conditions continue firm in all parts of the country. A. R. Erskine, sailing for Europe, predicted a good fourth quarter, while American Chain Co. has announced net earnings of \$514,851 for the first half of 1924.

A drop of \$3 a ton in the price of automobile sheets was a surprising development of the week.

Reo is going to exhibit right-hand drive cars at the Olympia Show, this year, for the first time.

Notice issued by Herbert F. Johnson, trustee in bankruptcy of Mitchell Motors Co., gives hopes of a dividend to Mitchell creditors.

The Haynes bankruptcy hearing has been postponed following the filing in court at Indianapolis of a composition offer and petition asking for a meeting of creditors to consider the proposal, which consists of a reiteration of the offer to pay creditors on the basis of 15 cents on the dollar.

I. J. Reuter has succeeded W. M. Sweet as president of the Klaxon Co.

Plants in Midwest Busy on 1925 Cars

October Expected to See Marked Advance in Output of Cars and Trucks

CHICAGO, Sept. 29—Additional factories in this district have been brought into production on 1925 models and output at these plants is being stepped up accordingly. Indications are that their activities will take a steady upward trend.

Auburn, Apperson, Nash, Moon and Studebaker are all in full swing now with the manufacture of their new lines, each company being well pleased with the reception its offerings are receiving. Appearance of their new lines, plus previous introductions by other companies, give the impression that the new season in this zone is on in earnest, while it is reasonable to expect that general output will go forward at an improved pace in October, the first post-vacation month.

Factory Stocks Depleted

As factory stocks are practically unheard of and as retailers are taking the new units to meet their demands as fast as deliveries can be made by manufacturers, the factory production, though not at record heights, is being turned swiftly into profit. Capital tied up in warehoused stocks will be held at a very low level for some time to come.

It is hoped that October will prove a materially better sales month in the retail field than September and that the marketing of automobiles will steadily strengthen from now on.

Factory executives are optimistic over the outlook for both a substantial domestic and foreign business. Considerable investigation has been under way recently respecting possibilities abroad and the conclusions reached generally are very favorable. A number of the equipment manufacturers also are taking keener interest in foreign markets and it is likely that the near future will find several of them conducting aggressive sales campaigns abroad who hitherto have given that outlet but limited attention.

September proved a highly pleasing month for two automobile companies especially, one of which claims the best business in its history for that month and the other the best September in its history. Both of these organizations are expecting to establish records in October and are hopeful that the last quarter will establish new marks. It is impossible to give this district's percentage output increase for September over August, but it is apparent that September's total was considerably better.

BETTER SALES EXPECTED THIS MONTH

New York

NEW YORK, Oct. 1.—Looking back over the month, Metropolitan dealers are agreed that while September was somewhat better than August in a retail way, it was not quite so good as expected. Indications point to a decided pickup in October following the impetus of the closed car show. Closed car demand is increasing with the approach of winter, while the new models that have been coming out have had a stimulating effect. There are some dealers who declare that demand at the present time exceeds that of the same period last year.

One interesting phase of the situation is the reports from several of the dealers handling high priced cars who state that business is good with them and, in fact, is better than it has been in a long time.

Not much change is noted in the used car situation but it is the belief that it is not causing as much worry as it formerly did.

Boston

BOSTON, Oct. 1.—Dealers feel that the fall offers better prospects than were expected by them a few months ago. The period of new car announcements is over and this has helped to stabilize things.

Outside dealers are coming through with orders better. Used cars have been moving a bit faster. A number of sales are being closed now with people back from vacations who did not want to buy a new car and use it over all kinds of roads while away. Some of the larger dealers report that their sales for the last four or five weeks have been better than any time this year except during and following the motor show. Business men in other lines report improved conditions.

Milwaukee

MILWAUKEE, Oct. 1.—More passenger cars were sold in the city of Milwaukee during September than in any other month in 1924, according to the reports obtained from seven representative distributors and dealers in about as many price classifications of cars.

The upward swing of the sales curve started with the first announcement of new models and has been accelerated by succeeding issues by other makers. Business conditions in general have been improving, which contributes another favorable factor. In a few instances dealers were obliged to announce and show new models before making complete disposition of supplies of previous models.

Dealer stocks represent a fairer balance with current demand than perhaps at any time in three or four years. While a year ago there had arrived no trepidation regarding a possible unbalance of supplies of cars, the feeling is much bet-

REPORTS of correspondents of Automotive Industries on this page and subsequent pages of this issue indicate that September sales were not up to expectations but that hopes are extended for improved business in October and subsequent months of the year. Conditions, however, differ in the various localities.

Demand is increasing for closed cars and few dealers report stocks to be greater than normal.

A much better tone has been given to the used car situation.

ter now that sails have been trimmed and dealers can truthfully inform a customer that the car of his selection cannot always be delivered immediately.

The ratio of demand for closed types to so-called open cars is leaning farther toward the closed model. The downward slide of the open car in public estimation and demand has most certainly been checked by the bringing out by representative makers of phaetons and roadsters with permanent tops and self-contained inclosures as original equipment, at a price but slightly higher than the open car and at a material saving over the closed type.

Dealers describe the used car situation as comparatively favorable.

Toledo

TOLEDO, Oct. 1.—Sales so far during the fall have not been up to expectations, being about 10 per cent under what they were a year ago. Little hope is held out for much of an increase in interest on the part of the public in the next few months.

Stocks in hands of dealers are moderate. There are a few old models left and in some of the new lines there has been a little shortage.

Closed cars are in greatly increased demand and on the average are running about 90 per cent of all sales in the new lines.

The used car situation is very good.

Louisville

LOUISVILLE, KY., Oct. 1.—Some of the Louisville dealers report business better during September than it was in August, although the general opinion is that the results will not equal those of September last year. The trade as a whole looks for business to show a gradual improvement during the fall months.

Used car stocks here continue to show a gratifying decrease. There are few, if any, dealers overstocked on new cars.

Chicago

CHICAGO, Oct. 1.—There was a tapering off of retail sales in the Chicago district in September, when considering the trade as a whole, notwithstanding instances of improved business reported by some dealers. The most pronounced drop was registered in the last two weeks.

The proportionate volume of closed car sales compared with sales of open models is high. Stocks of 1924 models have ceased to be a problem while retail takings of 1925 stocks, generally speaking, are small, due to slack demand. There are evidences of a general tightening on used car allowances and there is a fairly free movement of the better grades of second hand vehicles. Many of the local dealers speak optimistically of prospects for last-quarter business but there are few who expect broken records while the majority will be satisfied if the next three months yield normal sales.

Salt Lake City

SALT LAKE CITY, Oct. 1.—The automobile business here is not quite normal for the time of year. The industrial outlook, in spite of the partial crop failure, is good.

Bankers are more optimistic than they have been for some time. They say deposits are increasing, the demand for money is good, and borrowers are paying their interest promptly. Business failures of importance are few and far between in this territory today. Business men in practically every line report collections in better shape than for years.

Stocks of new automobiles generally are normal. With a few exceptions every one reports the closed car as gaining in popularity. Regarding the used car situation, reports are somewhat conflicting, but taking the industry as a whole conditions in this respect would not seem to be as good as they were.

Seattle

SEATTLE, Oct. 1.—Retailers in the Puget Sound district find themselves with an average fall business with indications that October, November, and December will be satisfactory due to decided industrial improvement here. On the average, dealers are carrying the lowest stock in years.

Fall business in some lines is ahead of last fall, but as a rule sales will probably be 5 per cent less than for this period last year.

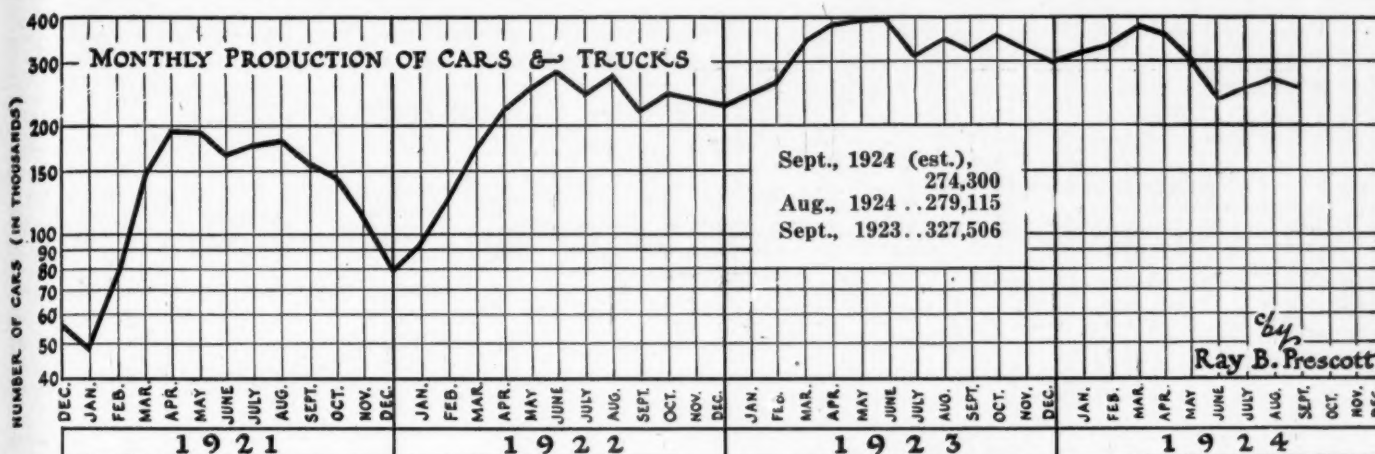
Dealers report approximately 40 per cent of sales now are closed cars, which is an increase over closed car sales last year.

The usual increase in the number of used cars is noted by dealers.

The truck market continues good.

(Conditions in other cities on page 620)

OUTPUT IN SEPTEMBER TOTALED 274,300



Total for 9 Months Shows a 6 Per Cent Drop from Year Ago

NEW YORK, Oct. 1—An estimate based on shipping returns made by the National Automobile Chamber of Commerce places September production of cars and trucks at 274,300. This is 1.73 per cent under August's total of 279,115 and 16 per cent under September, 1923. Last year September was 5 per cent under August, 1923.

With returns in for the first three quarters of 1924, the industry swings into the homestretch 6 per cent under the production figures for the first nine months of 1923, the total for the period being 2,814,487 as against 2,991,969 for the same stretch a year ago. Going into the final quarter 177,482 behind the count of 1923, it is practically a certainty that the record breaking four million total of that twelve months will not be reached.

It would seem, taking it for granted that the industry will go the last quarter at the same pace it has been holding of late, that the total for the year will be around 3,500,000—maybe 3,700,000 if the anticipated fall business and farmer buying materialize. It is doubtful if production will be pushed to the same extent it was a year ago in the last quarter, for it is extremely doubtful if there will be the stocking of cars by dealers that marked the windup of the industry's bumper year.

Comparing this and last year by quarters the statistics disclose that whereas in 1923 the big period was the second quarter, this time the factory rush came in the first three months. At that, this year's first quarter count of 1,066,279 did not touch the 1,155,511 of the second quarter in 1923.

Production Last Month Showed a Drop of 1.73 Per Cent Compared with Total Figure Reported as August Output

NEW YORK, Oct. 2—Estimates based on shipping returns by the National Automobile Chamber of Commerce place September production of cars and trucks at 274,300 a decline of 1.73 per cent from August.

The following table gives the statistics for the first nine months of 1923 and 1924:

| | Output | | Carloads | | Driveaways | | Boat | |
|-----------|---------|---------|----------|--------|------------|--------|-------|--------|
| | 1924 | 1923 | 1924 | 1923 | 1924 | 1923 | 1924 | 1923 |
| January | 316,278 | 243,554 | 46,474 | 35,423 | 41,489 | 30,072 | 1,024 | 728 |
| February | 367,527 | 276,955 | 52,224 | 36,137 | 42,594 | 43,620 | 427 | 882 |
| March | 382,474 | 355,073 | 54,545 | 44,995 | 41,555 | 63,017 | 495 | 1,888 |
| April | 373,203 | 382,746 | 48,030 | 46,102 | 37,741 | 60,483 | 4,156 | 5,028 |
| May | 312,870 | 394,190 | 35,510 | 45,402 | 32,756 | 62,357 | 8,338 | 12,818 |
| June | 245,817 | 378,575 | 26,046 | 40,291 | 25,205 | 59,110 | 7,321 | 13,494 |
| July | 262,903 | 328,063 | 28,055 | 32,837 | 26,090 | 46,946 | 7,500 | 10,135 |
| August | 279,115 | 345,271 | 30,200 | 38,319 | 28,150 | 45,958 | 7,554 | 10,053 |
| September | 274,300 | 327,542 | 28,360 | 35,986 | 28,670 | 39,653 | 7,130 | 8,463 |

Factory shipments and output for the other months of 1923 and 1922 follow:

| | Output | | Carloads | | Driveaways | | Boat | |
|----------|---------|---------|----------|--------|------------|--------|-------|-------|
| | 1923 | 1922 | 1923 | 1922 | 1923 | 1922 | 1923 | 1922 |
| October | 365,162 | 239,406 | 42,236 | 27,100 | 37,947 | 35,203 | 7,663 | 7,605 |
| November | 312,996 | 237,329 | 38,133 | 27,232 | 32,959 | 27,376 | 6,413 | 5,070 |
| December | 303,201 | 228,410 | 34,984 | 27,244 | 27,608 | 26,743 | 4,000 | 1,307 |

Motor vehicle production segregated as to cars and trucks is as follows:

| | 1923 | | | 1924 | |
|-----------|---------|--------|------------|---------|--------|
| | Cars | Trucks | | Cars | Trucks |
| January | 223,822 | 19,732 | January | 287,353 | 28,925 |
| February | 254,782 | 22,173 | February | 336,371 | 31,156 |
| March | 319,789 | 35,284 | March | 348,356 | 34,118 |
| April | 344,661 | 38,085 | April | 337,045 | 36,158 |
| May | 350,460 | 43,730 | May | 279,455 | 33,415 |
| June | 337,442 | 41,173 | June | 217,935 | 27,882 |
| July | 297,413 | 30,692 | July | 237,668 | 25,235 |
| August | 314,431 | 30,872 | August | 251,631 | 27,484 |
| September | 298,964 | 28,578 | *September | 246,870 | 27,430 |
| October | 335,041 | 30,139 | | | |
| November | 284,939 | 28,073 | | | |
| December | 275,472 | 27,762 | | | |

* Estimated.

Production by quarters this year and last follows:

| | 1924 | 1923 |
|----------------|-----------|-----------|
| First quarter | 1,066,279 | 875,582 |
| Second quarter | 931,890 | 1,155,511 |
| Third quarter | 816,318 | 1,000,876 |
| Total | 2,814,487 | 2,991,969 |

DETROIT SALES CONDITIONS

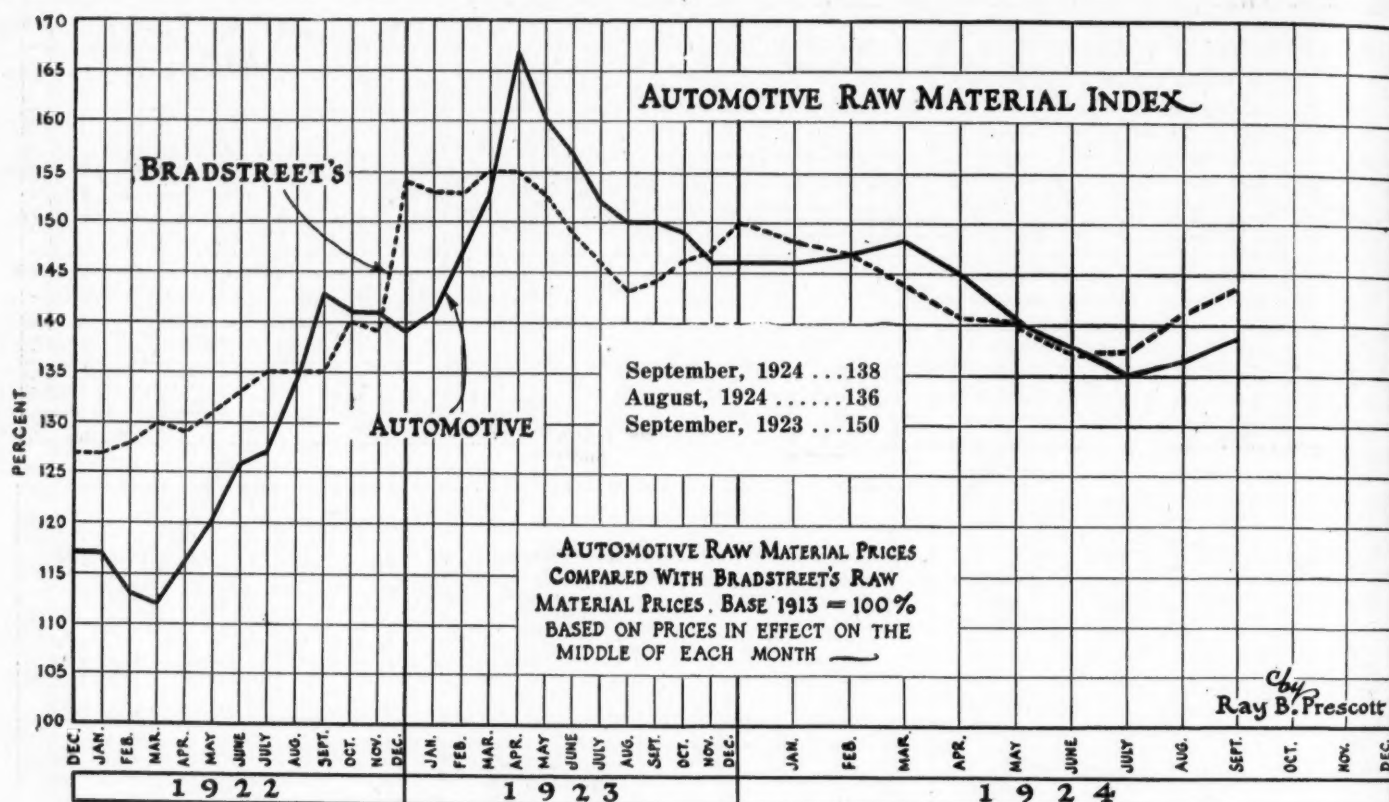
DETROIT, Oct. 1—Business in Detroit during October is expected to show a slightly better trend than for the last

few months, but dealers do not expect any important increase. The used car situation continues to be poor.

In the State the business prospect is better than in the city of Detroit. Industrial cities of the State are in much the same condition as Detroit and business is slow, but in the smaller communities and in the agricultural districts generally, there is better business.

There are no new car stocks to speak of, except in the hands of distributors and factory branches.

MATERIAL PRICES CONTINUE TO RISE



Problem of Making Deliveries Faces Cincinnati Dealers

Cincinnati

CINCINNATI, Oct. 1.—If the Cincinnati market is taken as a whole, September was not as good as a year ago. Dealers handling new cars have been confronted with the problem of delivery. Their stocks are very low and this has handicapped them.

The used car situation is showing no improvement. Too liberal allowances are being made on the trade-ins and this is eating more and more into profits.

The outlook for fall business is good. Dealers feel that October will be a good month. A number of dealers state that 70 per cent of their total sales are closed cars while others estimate that closed cars constitute as high as 85 per cent of sales.

Philadelphia

PHILADELPHIA, Oct. 1.—While only 2424 new automobiles were sold in Philadelphia during August, as against 2762 in July, the number of sales made in September, it is said by dealers, will bring figures back to a satisfactory basis. Lately sales of less expensive cars, which had been forging rapidly ahead, in many instances have fallen off substantially and high-priced cars have been selling particularly well since early in September. Ford sales have declined

in the last 60 days. Some improvement is shown in the rural districts of the Philadelphia territory.

Fall business as yet cannot be considered better than last year, but dealer stocks are now notably clean as regards 1924 models. Undoubtedly the public hereabouts has become educated to prefer closed cars and most of the later orders are in that direction. The used car situation may at last be characterized as good, as there are few on hand anywhere.

Des Moines

DES MOINES, Oct. 1.—Betterment in business during September is more noticeable in rural districts than among city dealers. One distributor in moderate priced cars shipped more cars to associate dealers during the last week of September than during any week but one this year.

Dealer stocks, as a rule, are not as large as usual. The slump in business during August caused many dealers to be overconservative in stocking cars. Used cars are selling at new low price levels and dealers are having extreme difficulty in moving open models at sacrifice prices.

Practically 80 per cent of all the new cars being sold are closed models. This is especially true among city dealers.

Grand Rapids

GRAND RAPIDS, MICH., Oct. 1.—Distributors and dealers in the western Michigan territory are optimistic concerning the prospects of a good fall business. As in most other sections of the country, late spring and summer business fell far short of expectations.

Recently, however, there has been a revival in the demand for cars, and there are real evidences of an upward trend. The furniture trade, which has been dull for some time, is showing signs of renewed activity, and in the rural sections the recent rise in the prices on farm products is having its effect.

As regards used car stocks some dealers state that theirs are at a minimum, while others admit that they are rather heavily loaded. Generally speaking, the used car market is weak, although the demand for closed models in good condition is strong.

Truck dealers have been enjoying a good business throughout the summer. One dealer states that August was the best month he ever had. This business has come mostly from the cities, as the average farmer in this section is not a truck prospect, except perhaps for the Ford dealer. The demand for motor buses has been strong.

(Conditions in other cities on page 628)

British Dunlop Plan Overcomes Objection

Provides That Preferred Dividend Arrears Shall Be Satisfied with Cash

LONDON, Sept. 23 (by mail)—The long-awaited capital reorganization plan for the Dunlop Rubber Co. to replace the original one rejected by the "C" preferred stockholders last June has been announced.

It will be remembered that a deficiency of £11,353,667 had to be written off, the big items in the loss being the £7,731,739 debit on profit and loss account up to June, 1922, and £4,516,787 for depreciation in holdings in subsidiaries, the American company, etc. The £1,299,171 balance of the reserve fund had been deducted before arriving at the net deficiency.

It is now proposed to write £10,527,543 off the share capital and to provide for the balance of the deficiency by an appropriation from the profits for 18 months ended December, 1923, and by transferring £130,000 to goodwill.

It is proposed to write 13s. 4d. off each £1 common share and to ask holders of all three classes of preferred stock to surrender their contingent rights to participate in surplus profits—½ per cent on the "A" and "B" shares and 1 per cent on the "C" shares.

Provision for "C" Shares

The "C" shares, however, are to be written down by 4s. per share instead of by 5s., as proposed under the original plan, while the "C" preferred dividend will be increased to 10 per cent on the reduced face value, or 8 per cent on the existing value, and in a winding-up the shares would be regarded as £1 shares.

The fundamental difference between the present and the original plan lies in the satisfaction of the arrears of preferred dividend—the factor which brought forth the opposition from the "C" preferred shareholders. Instead of these arrears being satisfied in fully-paid common shares, as suggested under the original plan, it is now proposed to pay cash, the "A" and "B" shares to receive a dividend equal to 2s. 10.8d. per share and the "C" shares one equal to 3s. 1.6d. per share.

In order to meet these dividends without impairing the cash resources of the company it is intended to issue in due course about £800,000 short-term second debentures, but an increase in the borrowing powers of the directors will be necessary for this purpose.

DROPS READING MOTORCYCLE

CLEVELAND, Oct. 1—The Reading Standard Motorcycle, which has been manufactured by the Cleveland Motorcycle Manufacturing Co. for several years, has been discontinued, the company now solely concentrating on the

Business in Brief

Written exclusively for AUTOMOTIVE INDUSTRIES by the Guaranty Trust Co., second largest bank in America.

NEW YORK, Oct. 1—Trade continues to improve slowly, although considerable irregularity is still evident. The increase in credit demand has been reflected in another slight stiffening of money rates. Stock quotations moved irregularly last week, while commodity prices in general advanced.

The price of cotton rose sharply last week on the publication of the Government crop report and remained firm throughout the week. The official estimate forecasts a crop of 12,596,000 bales, which compares with the previous estimate of 12,787,000 bales. The condition of the crop on Sept. 16 is placed at 55.4 per cent of normal, as against 59.3 per cent on Sept. 1, 1924, and 54.1 per cent on Sept. 1, 1923.

Car loadings in the week ended Sept. 13 reached the highest total since last October and exceeded the corresponding figure for last year for the first time since March. The total was 1,061,424 cars, comparing with 920,979 in the preceding (Labor Day) week and 1,060,563 a year ago. Loadings of merchandise and freight in less than carload lots set a new high record for all time.

The production of crude petroleum in the week ended Sept. 20 averaged 2,038,850 barrels a day, as compared with a daily average of 2,041,450 barrels in the preceding week and 2,242,700 barrels in the corresponding week last year.

Sales of mail-order houses and department and chain stores in August were larger than in July, but smaller than in August last year. Mail-order houses, five and ten cent chains, drug chains, cigar chains and music chains reported more than the usual seasonal growth.

Fisher's index of wholesale commodity prices stood at 147.8 last week, comparing with 147.3 in the preceding week and 149.7 two weeks before. Bradstreet's food index was \$3.28, as against \$3.26 in the preceding week and \$3.28 a year ago.

Discounts by Federal Reserve banks increased \$1,900,000 during the week ended Sept. 24, while open market purchases declined \$7,300,000 and holdings of Government securities declined \$44,100,000.

manufacture of Cleveland motorcycles and bicycles.

Makers Draw Space for National Shows

Number to Exhibit at New York and Chicago Is Less Than at Last Displays

NEW YORK, Oct. 2—Drawing for space in the silver jubilee shows to be held in New York Jan. 2-10 and Chicago Jan. 23-31 took place today at a general meeting of the National Automobile Chamber of Commerce.

Space was assigned to 53 manufacturers of passenger cars, while five taxicab makers were also cared for. This is a smaller representation of the car making branch of the industry than in the last shows, when 62 makes of passenger cars and seven taxicabs were displayed. Those missing this time include Anderson, American, Barley, Columbia, Dort, Elgin, H.C.S., Lafayette, R & V, Roamer and Templar.

Rollin is the only car making its show debut, this being the first time it has been in the show proper. Ambassador, which has been out for several years, has returned to the fold, while the Stanley steamer, now manufactured by the Steam Vehicle Corporation of Syracuse, again will show after having been out for some time. DuPont is the only one which will not be in the Chicago show, specifying New York only in its application.

In the taxicab section Pennant, R. & L. and Dodge are not on the list, while the newcomer is the H.C.S., the manufacturer of which invaded the taxicab field during the past summer.

Those that were allotted space were:

Passenger Cars—Ambassador, Apperson, Auburn, Buick, Cadillac, Case, Cole, Chrysler, Chevrolet, Cleveland, Dodge Brothers, Durant, Dupont, Davis, Elcar, Essex, Flint, Franklin, Gardner, Gray, Haynes, Hudson, Hupmobile, Jewett, Jordan, Kissel, Lincoln, Lexington, McFarlan, Maxwell, Moon, Marmon, Nash, Oldsmobile, Oakland, Peerless, Pierce-Arrow, Packard, Paige, Rickenbacker, Reo, Rollin, Studebaker, Stanley, Stearns, Star, Stutz, Velle, Willys-Knight, Willys-Overland, Westcott and Wills Sainte Claire.

Taxicabs—Yellow, Checker, Reo, Premier, H. C. S.

Voice Insurance Protest

NEW YORK, Oct. 1—Directors of the National Automobile Chamber of Commerce at their meeting today, preceding the general meeting of members set for tomorrow, voiced a protest against the proposal of the Hoover Committee on Insurance and Highway Safety to compel liability and property damage insurance on cars sold on time payments. The protest was based on the belief that it is beyond the province of an accident prevention committee to make such a recommendation. Such insurance, too, the directors believe, tends to make for reckless driving.

The directors also approved the form of the cross licensing agreement which is to be renewed.

I. J. Reuter Becomes President of Klaxon

Succeeds W. M. Sweet, Who Resigns When Headquarters Are Moved to Anderson

NEW YORK, Sept. 29—Instead of locating the sales headquarters of the Klaxon Co. in Detroit, as first intended when the horn making concern was transferred to the Remy division, President A. P. Sloan, Jr., of General Motors, now announces that sales operations will be conducted from Anderson, Ind., to which place the Klaxon production operations have also been transferred.

At the same time it is announced that I. J. Reuter, general manager of the Remy division, has been made president of the Klaxon Co., which is the sales organization, while R. W. Wilkinson, who in the past has handled the sales of Klaxon horns with the jobbing industry, will continue in that position.

The appointment of Mr. Reuter follows the resignation of William M. Sweet as president of the Klaxon Co. Mr. Sweet's desire to remain in the East, because of business interests here, caused him to sever his connections with General Motors. He is now considering several propositions, any one of which will keep him in the automotive industry with which he has been identified for many years.

For three years Mr. Sweet has been in charge of Klaxon interests in Newark, and last year he broke a sales record by turning out 1,300,000 horns, while in the first half of this year he sold 537,000. Joining United Motors in 1916, before it became a unit of General Motors, in 1919, he was assistant to A. P. Sloan, Jr., before accepting the Klaxon portfolio.

Creditors of Mitchell Receive Dividend Hopes

RACINE, WIS., Sept. 29.—Creditors of the defunct Mitchell Motors Co. have been given hopes of an early declaration of the first dividend by a notice issued by Herbert F. Johnson, trustee in bankruptcy. The matter of government claims for unpaid taxes and recovery of sums paid under war contracts has not been settled, but an early decision is looked for. The original dividend will then be declared.

Mr. Johnson has on hand \$1,031,945 in cash, and a few assets remain unsold. Bankruptcy schedules revealed liabilities of \$3,960,240, the bulk of which is owing to large New York, Chicago, Milwaukee and Racine banks.

COATS PLANT SOLD FOR \$160,000

COLUMBUS, OHIO, Oct. 1—Former Attorney General John C. Price, trustee in bankruptcy for the Coats Steam Car Co., announced the sale of the former

TWO PLANES COMPLETE WORLD-ROUND FLIGHT

WASHINGTON, Sept. 29—The world's flight was officially ended when two of the four original planes that left Seattle at 8.30 a.m., Sunday, April 6, arrived at the starting point at 1.36 p.m., yesterday afternoon.

Accompanying the two survivors was the Boston II, piloted by Lieut. Leigh Wade, whose plane was smashed near the Faroe Islands and who was given the spare at Pictou Harbor, N. S., so that he might complete the world's flight, with Lieut. Erik H. Nelson and Lieut. Lowell H. Smith, who made the entire trip.

The flight was made in five months and 22 days, the route of the aviators taking them into 21 foreign countries and 25 States and one territory. A total of 57 hops were made, with an average of 483 miles to each jump. The total distance was 27,000 miles.

It is estimated that each air cruiser consumed 20 gallons of gasoline per hour, with oil consumption running about 30 gallons every 2400 miles.

plant of the defunct company, located on South High Street, Columbus, to the Boyerstown Casket Co. of Boyerstown, Pa., for \$160,000. On two former occasions the plant was offered for sale but the best offer was \$107,000.

Wenstone Will Expand Its Field of Operations

CHIPPEWA FALLS, WIS., Sept. 29—Extensive changes whereby the Wenstone Rubber Products Co. of Chicago will consolidate production at the tire factory opened in Chippewa Falls, Wis., on June 15, 1923, and invasion of the general tire field instead of concentrating on Ford and other light car equipment, have been announced by E. E. Wendell, secretary and director of sales.

Mr. Wendell is moving his offices and residence from Chicago to Chippewa Falls. The Chippewa Falls plant is operating at maximum capacity and still continues to be at least three weeks behind on shipping instructions, practically all of the business being for prompt delivery.

TAKES OVER R & V PARTS

EAST MOLINE, ILL., Sept. 30—The recently organized Knight Auto Parts Co. has taken over the automobile parts business of the R & V Motor Co. The formation of the new company means assurance of service to owners of the cars. D. S. Smith, for many years associated with the R & V interests, is manager of the new firm and J. L. Hartman will be in charge of the repair shop.

Haynes Offer Filed and Delays Hearing

Company Proposes to Pay Creditors on the Basis of 15 Cents on the Dollar

KOKOMO, IND., Sept. 27—Postponement of the hearing before Harry C. Sheridan, referee in bankruptcy, at which directors and officials of the Haynes Automobile Company were to have been examined, Sept. 22, following the filing in court at Indianapolis of a composition offer and a petition asking for a meeting of creditors to consider the proposal. This action was taken by Elwood Haynes, president of the Haynes company.

The composition proposal was a formal reiteration of the offer made recently under which creditors would be paid on the basis of 15 cents on the dollar. Mr. Haynes' petition specified that 5 per cent would be paid in cash on confirmation of the offer, 5 per cent 60 days later and the remaining 5 per cent 120 days later.

Due to the delay that necessarily will result in sending official announcement of the meeting to the several thousand stockholders, it is expected that the meeting will not be held until some time early in October. Barring unforeseen developments, it is said production should start immediately after the meeting if the action taken is favorable.

A large number of creditors are said to have indicated unofficially that the terms of the offer will be acceptable. Three creditors, the Chicago Curled Hair Co., the Duplex Envelope Co. and the Taylor Trunk Works, recently filed an intervening petition in Federal Court at Indianapolis, but action on this as well as on the original petition, asking bankruptcy, is held in abeyance pending negotiations looking to a harmonious settlement along lines as suggested by Mr. Haynes.

Bay State Plant Sold; Production to Continue

FRAMINGHAM, MASS., Oct. 1.—The Bay State Motor Co. has purchased all the merchandise, machinery, cars, goodwill and other property of the Bay State Automobile Co. from Guy H. Murchie, the receiver.

As a result, the factories where the Bay State cars were being turned out for the last few years will resume operations this month when about 500 employees, who have been out of work for a long time, will be reemployed.

The new corporation will operate under the direction of Richard H. Long, who founded the company. No report has been issued as to the price paid to Mr. Murchie, but the plant alone is valued at more than \$600,000. The Long Motor Sales Co. is to have charge of the sales of the output.

Exports Recovered Position in August

Gain in Shipments from U. S.
Reported Over Both of the
Preceding Months

WASHINGTON, Sept. 29.—Improvement in export shipments of passenger cars and motor trucks during August, as compared with July, is shown in the figures for the month compiled by the Bureau of Foreign and Domestic Commerce. During August of this year 12,220 passenger cars were exported from the United States, as compared with 9945 in July and with 8411 in August of last year. Motor truck exports in August aggregated 2351, as against 1752 in July and contrasted to 1646 in August, a year ago.

Figures for the eight months' period in both passenger car and truck shipments and for August of last year follow:

| | Passenger Cars | Trucks |
|----------------|----------------|--------|
| | 1923 | |
| August | 8,411 | 1,646 |
| | 1924 | |
| January | 12,614 | 2,845 |
| February | 13,329 | 1,704 |
| March | 14,035 | 2,839 |
| April | 15,808 | 2,764 |
| May | 14,363 | 2,739 |
| June | 10,142 | 2,191 |
| July | 9,945 | 1,752 |
| August | 12,200 | 2,351 |

Details of the shipments of automotive products for August are given in the table published on this page.

SEAPLANE RACE CANCELLED

BALTIMORE, Sept. 29.—The Flying Club of Baltimore has cancelled the international Schneider Cup race for sea-

planes, set for Oct. 24-25, because of Italy scratching its entry, while Great Britain's best plane was so badly damaged recently that the English would have been unable to compete.

Bates Bondholders Get More Time to Buy Plant

JOLIET, ILL., Sept. 30.—Bondholders of the defunct Bates Machinery Tractor Co., tractor and farm implement manufacturer, have been allowed an extension of time until Oct. 17 to raise funds for the purchase of the plant, which was scheduled to be offered at sale a week ago.

The outstanding bonds to the amount of \$450,000 are first mortgage against the plant and beyond this \$30,000 has been invested in machinery and equipment. Bondholders may protect their title by bidding in this later figure. This settlement is expected to give creditors a substantial return on their claims.

Exports, Imports and Reimports of the Automotive Industry for August of Current Year and Total for Eight Months Ending August 31, 1924.

| | EXPORTS | | | | Eight Months Ending August | | | |
|---|-----------------|-------------|-----------|--------------|----------------------------|--------------|-----------|--------------|
| | Month of August | | | | 1923 | | 1924 | |
| | No. | Value | No. | Value | No. | Value | No. | Value |
| Automobiles including chassis..... | 10,065 | \$7,101,654 | 14,597 | \$10,973,950 | 101,653 | \$68,461,082 | 121,233 | \$86,977,215 |
| Electric trucks and passenger cars..... | 8 | 26,835 | ..... | ..... | 153 | 230,243 | ..... | ..... |
| Motor trucks and buses, except electric: | | | | | | | | |
| Up to 1 ton..... | 1,063 | 452,626 | 983 | 411,964 | 12,892 | 4,534,153 | 8,660 | 3,694,831 |
| Over 1 and up to 2½ tons..... | 528 | 514,781 | 559 | 762,285 | 2,864 | 3,349,709 | 3,592 | 4,803,636 |
| Over 2½ tons..... | 55 | 152,598 | 152 | 375,322 | 575 | 1,349,520 | 994 | 2,418,132 |
| Total motor trucks and buses, except electric | 1,646 | 1,120,005 | 2,351 | 1,791,655 | 16,331 | 9,233,382 | 18,674 | 12,969,444 |
| PASSENGER CARS | | | | | | | | |
| Passenger cars, except electric: | | | | | | | | |
| Value up to \$500 inclusive..... | 3,750 | 1,369,569 | 5,316 | 1,952,041 | 38,309 | 13,583,301 | 40,610 | 14,758,681 |
| Value up to \$800..... | 1,684 | 1,096,132 | 2,956 | 2,075,489 | 18,145 | 12,112,180 | 29,684 | 19,996,547 |
| Value over \$800 and up to \$2000..... | 2,775 | 2,941,794 | 3,577 | 4,104,600 | 26,850 | 28,189,538 | 29,830 | 32,598,367 |
| Value over \$2000..... | 202 | 547,319 | 371 | 1,025,040 | 1,865 | 5,112,438 | 2,334 | 6,526,958 |
| Total passenger cars, except electric..... | 8,411 | 5,954,814 | 12,220 | 9,157,170 | 85,169 | 58,997,457 | 102,458 | 73,880,553 |
| PARTS, ETC. | | | | | | | | |
| Parts, including engines and tires..... | 355,443 | 96,592 | 1,834,711 | 411,795 | 21,731,255 | 3,437,682 | 9,318,447 | 2,052,755 |
| Automobile unit assemblies..... | 19,326,344 | 4,331,902 | ..... | ..... | 155,928,949 | 35,588,776 | ..... | ..... |
| Accessories and parts..... | 284,124 | 147,160 | 721,132 | 311,343 | 1,089,473 | 578,221 | 4,393,470 | 1,761,560 |
| Automobile service appliances (not elsewhere specified)*..... | 18 | 12,408 | 3 | 3,938 | 126 | 65,036 | 92 | 68,711 |
| Station and warehouse motor trucks..... | 80 | 20,371 | 114 | 26,406 | 867 | 303,658 | 340 | 129,706 |
| Trailers..... | 3 | 7,200 | 4 | 29,000 | 39 | 268,451 | 47 | 298,677 |
| Airplanes..... | 46,430 | 11,223 | 8,075 | 4,481 | 139,529 | 34,500 | 126,648 | 141,851 |
| Parts of airplanes, except engines and tires* | | | | | | | | |
| BICYCLES, ETC. | | | | | | | | |
| Bicycles and tricycles..... | 2,428 | 25,177 | 621 | 15,289 | 18,647 | 147,011 | 4,543 | 114,504 |
| Motorcycles..... | 1,761 | 428,577 | 916 | 215,259 | 15,385 | 3,624,141 | 11,244 | 2,733,483 |
| Parts, except tires..... | 224,728 | 120,203 | 167,079 | 104,613 | 2,293,419 | 1,157,180 | 2,048,812 | 1,104,800 |
| INTERNAL COMBUSTION ENGINES | | | | | | | | |
| Stationary and portable: | | | | | | | | |
| Diesel and Semi-Diesel..... | 30 | 17,811 | 153 | 13,445 | 795 | 336,511 | 1,247 | 412,591 |
| Other stationary and portable: | | | | | | | | |
| Not over 8 H.P..... | 2,352 | 193,939 | 2,845 | 266,018 | 19,774 | 1,858,343 | 16,025 | 1,480,190 |
| Over 8 H.P..... | 129 | 107,026 | 211 | 115,276 | 1,639 | 864,883 | 1,795 | 1,129,049 |
| Automobile engines..... | 235 | 21,946 | 171 | 33,036 | 2,931 | 330,340 | 989 | 130,505 |
| Motor trucks and buses..... | 1,940 | 258,916 | 1,094 | 221,340 | 29,008 | 3,516,540 | 14,940 | 2,331,589 |
| Passenger cars..... | 436 | 117,924 | 1,623 | 491,627 | 1,430 | 336,462 | 2,309 | 700,202 |
| Tractors..... | 6 | 4,205 | 1 | 375 | 30 | 27,257 | 121 | 185,149 |
| Aircraft..... | 686,207 | 309,546 | 628,955 | 326,674 | 5,037,121 | 2,229,765 | 5,769,373 | 2,524,192 |
| Accessories..... | | | | | | | | |
| IMPORTS | | | | | | | | |
| Automobiles and chassis (dutiable)..... | 59 | 47,116 | 37 | 41,650 | 447 | 583,786 | 388 | 538,665 |
| Other vehicles and parts for them (dutiable)..... | ..... | 142,647 | ..... | 14,205 | ..... | 1,363,167 | ..... | 779,784 |
| REIMPORTS | | | | | | | | |
| Automobiles (free from duty)..... | 45 | 52,836 | 88 | 51,208 | 2,081 | 2,317,112 | 283 | 322,944 |

* Pounds

Men of the Industry and What They Are Doing

John N. Willys Sails for Europe

John N. Willys, president of the Willys-Overland Co., has sailed for Europe, planning a visit to both the Paris and London shows. Before leaving Mr. Willys announced that his plants are turning out 550 cars a day, 70 per cent of which are Overlands.

Tibbetts on Patent Committee

Milton Tibbetts, patent counsel for Packard Motor Car Co., has been nominated to serve on a committee to simplify the methods of procedure of the Patent Office. He will represent the Michigan patent law association. A. J. Brousseau will represent the National Automobile Chamber of Commerce.

Dr. Geer to Sever Connections

Dr. W. C. Geer, vice-president in charge of research, will sever his official connection with the B. F. Goodrich Co. some time during 1925, it is announced. It is Dr. Geer's intention to spend the next few years in travel and study along lines stimulated by his long connection with the scientific features of the rubber industry. Twenty-five years with the Goodrich company, Dr. Geer has a reputation that is country-wide as a recognized authority in rubber chemistry. It is his intention to retain his Goodrich connection in a consulting capacity.

Tarantous with Newmark Company

Harry A. Tarantous, for 12 years identified with technical automotive journalism, has entered the advertising field, joining the forces of J. H. Newmark, Inc., Fisk Building, New York City, in an executive capacity.

Hamilton Represents Hoosier Clutch

A. C. Hamilton, until recently sales engineer of the General Aluminum & Brass Manufacturing Co., Detroit, and formerly chief engineer of the Oakland Motor Car Co. of Pontiac, has opened offices in the General Motors Building, Detroit. He will represent the Hoosier Clutch Co. of Muncie, Ind., which has just brought out a new type of automobile clutch, incorporating several novel features.

Kirk with Borg & Beck

James C. Kirk, former assistant store keeper at the Rock Island Lines Ship's shops, has been named manager of the Moline, Ill., plant of Borg & Beck, succeeding John W. Hobbs, who has become general manager of the Boston and Canadian interests of the company.

Goodrich Shifts Branch Managers

The B. F. Goodrich Co. has made several changes in branch and district managers affecting New York, Chicago and

Detroit. Gregory Flynn, formerly handling factory equipment sales in this territory, has been chosen as manager of the Detroit plant, succeeding W. H. Moore. George W. Sawin comes from the Chicago branch to become district manager, relieving George B. Campion, who goes to Akron to become manager of mechanical sales. Mr. Flynn before joining the Goodrich staff a year ago was vice-president of the E. A. Cassidy Co., accessory jobber, while Mr. Sawin served nearly six years in Chicago. Previous to that he was manager of the tire division of the Goodrich company.

Car Impounding Views Outlined by N. A. D. A.

ST. LOUIS, Oct. 1.—Objection is taken by the National Automobile Dealers Association, to the proposed law which would impound cars of drivers involved in accidents, as recommended by the Traffic and Planning Committee of the National Automobile Chamber of Commerce.

Following its protest of a couple of months ago, the N. A. D. A. now has issued a lengthy statement containing its views on the subject and its reasons for objecting.

"We have no objection to any motor vehicle law that seeks to place the responsibility where it belongs, namely, with the reckless driver," the statement says. "We concede the power of the State to deprive any owner of his right to drive a motor car where his driving is a menace to the public's safety, but to impound the car is to effect damnation of the vehicle and exoneration of the driver."

It claims that in calling a motor vehicle a "dangerous instrumentality," the guilt is transferred to the vehicle.

Government Completes Car and Truck Census

WASHINGTON, Oct. 1.—The United States Bureau of Public Roads announces that there were 15,552,077 cars and trucks registered in the United States on July 1. This is within 28,179 of the total of 15,523,898 reached by AUTOMOTIVE INDUSTRIES and published in the July 17 issue, two weeks after the end of the half year period.

In the matter of fees collected from registration fees, licenses and permits, the Government total was \$199,472,682, while AUTOMOTIVE INDUSTRIES reported \$195,821,622.

In addition the bureau reports that gasoline taxes in 36 States yielded \$32,430,410.

CORRECTION

That the Consolidated Aircraft Corp. of East Greenwich, R. I., has taken over the Gallaudet Aircraft Corp., as published in Automotive Industries, issue of

Sept. 11, is denied by J. K. Robinson, president of the Gallaudet company. Mr. Robinson declares that no such deal has been made, and that his corporation is still intact and doing the same character of business which it has been doing for the past four years, with no intention of abandoning this policy.

Abrogating Dealer Lien in Accidents Protested

WASHINGTON, Oct. 1.—The proposal of the Committee on Insurance and Highway Safety of the Hoover Traffic and Safety Conference to abrogate a dealer's lien on an automobile when the owner of the purchased car does bodily injury or property damage to someone else brought a protest from Pyke Johnson, representing the National Automobile Chamber of Commerce.

Mr. Johnson said that it was the purpose of the conference to devise ways and means of preventing accidents and not to indemnify persons who had been injured. As a result of the protest, it was decided that the question should be put up to the conference.

Air Organizations Headed by Lawrance and Russell

NEW YORK, Oct. 1.—The Aeronautical Chamber of Commerce of America and the Manufacturers' Aircraft Association have chosen their officers for the ensuing year. Charles L. Lawrance, vice-president of the Wright Aeronautical Corp., has been elected president of the former and Frank H. Russell, vice-president of the Curtiss Airplane & Motor Corp., president of the manufacturers' association.

Others chosen by the Aeronautical Chamber are: Vice-presidents, Henry M. Crane, president of the Society of Automotive Engineers; Allan Jackson and J. L. Callen; treasurer, Sherman M. Fairchild; general manager and assistant treasurer, S. S. Bradley; secretary, Luther K. Bell; assistant secretary, Owen A. Shannon; governors, W. C. Young, Grover C. Loening, J. G. Vincent, B. D. Thomas, Charles H. Colvin, Donald Douglas, J. M. Johnson, George P. Tidmarsh and Frank H. Russell.

Officers of the manufacturers' association, besides Mr. Russell, include: Vice-president, Glenn L. Martin, president of the Glenn L. Martin Co., Cleveland; treasurer, Charles L. Lawrance, vice-president of the Wright Aeronautical Corp. of Paterson; secretary, Chance Vought, president of the Chance Vought Corp. of Long Island City; general manager and assistant treasurer, S. S. Bradley; governors, George P. Tidmarsh, Boeing Airplane Co., Seattle; S. J. Elias, president of G. Elias & Brother, Inc., Buffalo, and Donald Douglas, president of the Douglas Co., Los Angeles.

Freight Rate Profit Has Been Paying Tax

Ruling Recently Announced Has
Been in Effect Since June
of Last Year

DETROIT, Oct. 1.—Manufacturers in the industry who are delivering cars from assembly plants and assessing a freight differential upon the delivery price are not affected in their manufacturing or sales policies under the ruling of the Internal Revenue Department recently published.

The policy of applying freight rates as of the central factory of such manufacturers has been in effect since the establishment of assembly branches. Profit derived from such freight rates, in reality a profit not represented in the sales price, has been subject to tax return since the application of excise taxes upon the industry dating from 1917.

Only Recently Published

The present ruling, "when the amount billed the purchaser in a separate item as freight is in excess of the actual transportation charge but the actual charge is also disclosed in the bill and known to the purchaser, only the amount billed as freight in excess of the actual charge is taxable as part of the sales price," has been in effect since June, 1923, though publication of it has only now been made.

The term "purchaser" as used in the ruling means the dealer to whom cars are shipped by the manufacturer. He, the purchaser or dealer, when billed for cars, is billed at the wholesale price, the fictitious freight from central manufacturing point to destination, the actual freight from assembly point to destination, and the tax, this latter item computed on the wholesale price plus the so-called freight differential.

Actual Freight Prepaid

In this method of billing the actual freight is prepaid by the car manufacturer. In some cases the actual freight may not be prepaid, but under the department ruling it is not essential that the manufacturer prepay the actual freight so long as it is kept separate from the fictitious freight in such way that the differential is easily ascertainable for purposes of taxation. Where the differential is not easily ascertainable the manufacturer may be held liable for tax upon the entire freight item.

Under one of the prior rulings, or previous to the fixing of rulings upon the freight differential tax, manufacturers operating under the assembly plan who to that time had failed to set up as separate items the actual and fictitious freights, were held liable for tax upon the entire freight and close to \$2,000,000 was paid the Government by the several manufacturers as back taxes. This represented a complete loss

as they had not been collected and could not at that time be collected and led to the definite ruling on the freight differential tax which is now substantiated by the published ruling.

The delivery price of the car to the final buyer thus includes the list price, plus excise tax on the car itself, plus the fictitious freight rate, and plus excise tax on the freight differential, which latter is in reality part of the true list price and subject to tax for that reason. The apportioning of the fictitious freight and the tax on the freight differential per car as part of a car load shipment is usually handled by the dealer and depends upon the number of cars per freight car load.

List prices on cars as fixed by manufacturers operating assembly plants, take into consideration the imposing of central point freight rates so that the list price is fictitious as indicating the actual car retail selling price. The profit to the dealer is determinable by his commission with relation to the list, but the profit to the manufacturer is his actual profit on the wholesale price of the car, plus his profit from the freight rate. If retail prices were based exclusively on the cost of production they would necessarily be higher, and if dealer scales of commission remained as now under such a price fixing method commissions would be higher.

Perrot Now Producing Bendix Electric Brake

NEW YORK, Oct. 1 — The Perrot Brake Corp., of South Bend, Ind., has announced the production of the Bendix electric brake, designed particularly for use on the heavier type of vehicle which customarily travels at high speeds.

It is designated by the makers as an adaptation of the Perrot mechanical four-wheel brake system. Details of the new device will be published in an early issue of AUTOMOTIVE INDUSTRIES.

E. H. Brewer Is Dead After Short Illness

CORTLAND, N. Y., Oct. 1—E. H. Brewer, chairman of the board of the Brewer-Titchener Corp., is dead, aged 73, following a short illness. Mr. Brewer was a pioneer in the industry, developing an extensive line of trimming hardware, bow sockets, drop forgings and stampings. His company, the Cortland Carriage Goods Co., the Cortland Forging and Crandal-Stone were consolidated into the Brewer-Titchener Corp.

WILLIAM B. MCCARTHY DEAD

MILFORD, CONN., Sept. 29—William B. McCarthy, president of the Rostand Manufacturing Co., is dead from heart disease. Mr. McCarthy was well known in the automotive industry as the originator of more than one device that has become standard with car and equipment manufacturers. He played a prominent part in the development of the modern windshield.

Committee Submits Highway Tax Views

Holds That Road User Should
Pay All Upkeep, Also Part
of Building Cost

ST. LOUIS, Sept. 27—Approval of the payment by the highway user of all the maintenance costs and a substantial share of the construction and interest costs of the highways which he uses was the chief conclusion in the report on "Problems of Highway Finance," submitted to the National Tax Association Convention here by Prof. Jacob Viner of the University of Chicago and chairman of a special committee named to consider this subject.

If the program so laid down is executed, the committee holds that all justification for charges that motor transportation is being subsidized in its competition with other transportation agencies will be removed.

The report says that "since about 40 per cent of the highway expenditures are met by borrowings, the time is rapidly approaching when special motor vehicle taxes will equal or surpass the expenditures on highways, both primary and local, for current tax receipts."

In approaching the problem the committee takes cognizance of the enormous increase in motor vehicle transportation, which, it holds, has brought incalculable gains to the American public. Consequently highway expenditures have necessarily been large, and in a period when general property taxation is already heavy the need of placing the cost of these necessary improvements upon the chief beneficiaries is emphasized.

While agreeing to the broad principle that motorists should pay a substantial share of the costs of the roads which they use, A. J. Brosseau of the National Automobile Chamber of Commerce took exception to the continuance of what he termed "discriminatory war excise taxes" on the broad ground that there is no relation between Federal aid and taxes imposed for war emergency purposes.

He held further that Federal aid is granted because a general public benefit is derived from the construction of primary roads. The only discussion of this point in the meeting was by H. M. McKenzie, American Farm Bureau Federation, who supported the position taken by Mr. Brosseau. The committee's viewpoint was based on its premise of a predominant special benefit.

TRUCK SHOW POSTPONED

CHICAGO, Oct. 1—The first national transportation show which was to be held in the American Exposition building, Oct. 21-27, under the auspices of Motor Truck Industries, Inc., has been definitely postponed until the week of Nov. 16-22, according to William N. Hallanger, manager of the truck association.

Bean Cars for 1925 Fitted with Balloons

Four-Wheel Brakes Also Added
as Standard Equipment—
Prices Remain Unchanged

LONDON, Sept. 23—(by mail)—Bean cars for 1924 will be fitted with balloon tires and four-wheel brakes as standard equipment and hydraulic spring checks and a rear windscreen will be standard in the case of open cars.

Bean cars stand well up among the first half-dozen British light cars in popularity and output. They are to comprise two models, termed 12 hp. and 14 hp. respectively. Both have four-cylinder engines, the dimensions of the smaller being 69 x 120 mm. and of the larger 75 x 135 mm. Four-speed gearsets are provided in both.

No variation in prices has been made, the additional equipment representing the better value afforded for next year. The 12 hp. four-passenger open model is £345, while the corresponding 14 hp. car (five-passenger) is £395; the four-door closed car on the larger chassis is £525.

The 14 hp. Bean compares with the Morris (Oxford model) at £285 with similar equipment and a four-five-passenger body, but the piston displacement of the Bean engine is 145 cu. in. as compared with the Morris 109 cu. in., while it has a wheelbase of 114 in. and a track of 54 in. as compared with 102 in. and 48 in. respectively. It is therefore a roomier and larger car, though both are termed 14 hp.

Maybach, German Car, Makes Appearance Here

NEW YORK, Sept. 29.—Representatives of the Maybach Motor Co. of Friedrichshafen, Germany, have brought to this country a Maybach electrically driven car which is said to be equipped with one of the most powerful motors ever installed in a stock car.

It is manufactured by a company allied with the concern which built the ZR-3 for the United States Government. Evidently the time of the Trans-Atlantic flight of the giant dirigible was considered appropriate for introducing this car on the American market.

The Maybach car has electric transmission and therefore has no gearshift lever, and it is claimed to be capable of a speed of 65 m.p.h. F. W. Von Meister is the American representative.

29 ADOPT WEYMAN BODY TYPE

LONDON, Sept. 20 (by mail)—It is announced that 15 British automobile manufacturers and 14 body builders have taken up licenses for the production of Weymann type (fabric) bodies, though it is not definitely assured at present

that all the 15 motor manufacturers will standardize a Weymann sedan for next year, some of them having taken up licenses merely for experimental purposes.

FINANCIAL NOTES

Continental Motors Corp. has authorized the payment of the regular quarterly dividend at the annual rate of 80 cents a share on the common stock, payable Oct. 30 to stock of record Oct. 18. With the payment of this dividend the company will have paid out \$1,056,507 in common stock dividends since Jan. 1.

Packard Motor Car Co. has declared an extra cash dividend of 3 per cent in addition to the usual quarterly dividend of 3 per cent to common stockholders of record Oct. 15.

Indiana Truck Corp. has declared the regular quarterly dividend of 1½ per cent on the preferred, payable Oct. 1 to stock of record Sept. 30.

Motor Products Corp. has declared the regular quarterly dividend of \$1 on preferred stock, payable Nov. 1 to stock of record Oct. 20.

Reo Will Export Cars with Right Hand Drive

DETROIT, Sept. 30—Reo Motor Car Co. will exhibit right-hand drive cars for the first time at the Olympia show, London, in October, according to a factory statement. A cut-away chassis will also be exhibited at this show and at other important shows on the continent.

The Reo company has been building speedwagons with right-hand drive for the last three years to accommodate the traffic rules of foreign countries but the Reo car has never been shipped with this drive. The change is now made because of the strides the company is making in its car business in England and other countries in which this drive is used.

Better Fourth Quarter Predicted by Erskine

NEW YORK, Oct. 1.—Before sailing for Europe Saturday, where he will visit the Paris and London shows and inspect the Studebaker organization abroad, A. R. Erskine, president of the Studebaker Corp., announced that net profits for the corporation for the current quarter will exceed \$2,000,000, with sales of cars approximating 18,000.

September production, Mr. Erskine said, will reach 9000 and in October will jump to 14,000, which is about the capacity of the plants. At the present time 14,000 men are employed and this number is being increased.

"We were out of production in July and part of August, arranging our plants for the manufacture of our new models," Mr. Erskine added. "The fourth quarter will show much better results in both sales and profits than the third quarter and may exceed any similar quarter in the corporation's history."

American Chain Net Placed at \$514,851

Total Sales for First Six Months
of Year Reported to Be
Above \$14,000,000

NEW YORK, Sept. 29.—In its report on its operations for the first half of 1924, the American Chain Co. declares that its automobile bumper business is progressing satisfactorily and that facilities for this department doubled during the last year and a half, with the result that the company now is able to handle this growing business without further plant expansion.

The company reports net sales on all its products for the first six months of more than \$14,000,000, as compared with \$15,216,828 in the corresponding period last year. Net earnings totaled \$514,851 after all expenses and taxes and reserves for interest and depreciation. This last is equal to 66 cents a share on the 250,000 shares of common stock outstanding, after allowing for dividends on the Class A stock. Operating income was \$1,271,279 after Federal taxes, against \$2,392,218 for the same period last year.

The general balance sheet as of June 30, 1924, shows net current assets of \$12,775,918, against \$13,192,472, and net current liabilities of \$1,631,051, against \$1,762,739 a year ago. The balance sheet also shows that the company has set aside dividends on the Class A stock for the balance of the current year, and on July 7 the company set up a reserve for dividends on this stock covering the first half of 1925.

Battery Makers to Aim at Standard Guarantee

NIAGARA FALLS, Oct. 1.—The National Battery Manufacturers Association concluded a two day session during which Arnold A. Mowbray was appointed permanent commissioner. Mr. Mowbray is at present secretary of the Asbestos Brake Lining Association, a position he will continue to hold.

Considerable discussion of the guarantee question resulted in a movement to standardize the battery guarantee. The abnormal ratings of radio A batteries were also brought up and recommendations were made favoring the rating advocated by the Bureau of Standards. Leon Percy, second vice-president, resigned and C. W. Noel was elected to fill the vacancy.

ISSUES GERMAN PERMITS

BERLIN, Sept. 15 (by mail)—The German foreign trade office for the motor vehicle industry was discontinued on Sept. 1. Import permits for motor vehicles will in future be issued by the federal commissioner for export and import permits (Reichskommissar für Aus- und Einfuhrbewilligung), Berlin W-15 Lietzenburger Strasse 18.

Believe Improvement Hinges on Election

Directors of M. A. M. A. See Encouraging Outlook if Conservatism Wins at Polls

NEW YORK, Sept. 29—Election results will have a most important bearing on the automotive situation in the opinion of the directors of the Motor and Accessory Manufacturers Association, who held their monthly meeting here last week. Conditions are encouraging now, they stated, and the next nine months will bring great improvement, provided there is a conservative election.

The views of the board on the situation were outlined following the meeting by President G. Brewer Griffin in the following statement:

The consensus of opinion is that the general situation is encouraging. The principal deterrent to more rapid and pronounced improvement is the political situation which has threatening aspects. The present issue is not the tariff, nor political parties but radicalism vs. conservatism. Should sane conservatism win in the next election, there are no underlying causes which would prevent substantial rapid improvement.

The automotive industry depends on general business and general business depends at this time upon the political results. Present indications are that the automotive industry is in a good position. There is strong confidence in the future nine months as evidenced by the efforts being made to cover requirements to July at the present market prices. The last quarter of this year will apparently be better than the same period in 1923.

Much production capacity is not utilized economically, and there is need for more labor-saving devices, but there is every evidence that this is well recognized and that the manufacturers are rapidly improving this condition. The day has passed when anyone regardless of capital or ability could successfully enter the automotive industry. The law of economics has worked in this as in the older industries where the question of ability, efficiency and finance have decided who should continue in the race. The line of demarcation between good and bad credit has never been more clearly drawn.

As one director expressed it, "On the horizon of business today, the automotive industry shines the highest."

Boosters' Overseas Club Holds First Fall Meeting

NEW YORK, Oct. 1.—The first fall meeting of the Overseas Club of the Boosters Organization, held at the Hotel Empire, brought out a large number of members. W. Lionel Buckland, of Melbourne, Australia, who was a guest of the Club, told of prospects for excellent business there. Bumper crops are assured and prices have been steadily rising on such commodities as wheat, wool, etc., which means prosperity for the country.

C. A. Canton of Canton Bros. & Co., Buenos Aires, Argentine, was another guest and said more or less the same

thing of his country. Crops are large and prices of grain, wool, hides and meat are increasing. He also mentioned the work being done to improve the roads and the stimulus it would offer automobile sales.

INDUSTRIAL NOTES

L. L. Harr, who has been for several years vice-president of the Graton & Knight Manufacturing Co. of Worcester, Mass., and J. F. Barnet, for 12 years associated with Harvey Firestone, have taken over the material assets of the Alexander Mirroscope Co. of Port Chester, N. Y. which has been succeeded by the Mirroscope Co. of America. The business of manufacturing automobile mirrors and machine stampings will be continued on a more extensive scale than in the past, plans having been made for increased production.

Laher Auto Spring Co. has purchased 63,000 sq. ft. of land in Oakland, Cal., from the California Transit Co., for the erection of a new main manufacturing plant. The corporation has plants at Portland, Seattle, Spokane, San Francisco and Los Angeles. The local plant will be devoted to the manufacture of flat automobile springs, and is the first of its kind to locate in Oakland.

Gellman Wrench Co., Rock Island, Ill., doubling its capital stock to \$100,000, announces plans for the erection of a factory within 18 months to handle its product. The company has been operating in this city for several years.

Carpenter Steel Co. of Reading, Pa., has opened an office and warehouse at 633 Fulton Street, Indianapolis, where it is carrying a complete stock of high-speed steel, carbon tool steel and drill rods.

Ajax Motor Estimating Machinery Requirements

RACINE, WIS., Sept. 29—David M. Averill, vice-president and general manager of the Ajax Motor Co., which will operate the former Mitchell plant, in a letter to the Racine employment service, outlines labor requirements so that an understanding of present and future demands may come, especially among Racine automobile workers who have had many idle days since the Mitchell bankruptcy closed these works. Mr. Averill says in part:

I think there has been a little misunderstanding about our needs. Actual production with us is yet some little way off. We will shortly have need of some tool designers and toolmakers. I do not believe it will be necessary for us to seek help outside of Racine.

Our buildings are in need of extensive repairs and we are hard at work along that line. We propose to machine and manufacture our motors, transmissions and axles, and possibly make our own bodies.

We are preparing estimates of our requirements of machinery and factory, but it will be some time before this work is completed. Then we must design our tools, dies, jigs and fixtures, and afterward make them, so production necessarily is some distance away.

BERLIN SHOW DATES CHANGED

BERLIN, Sept. 8 (by mail)—The Berlin show dates have been changed from Sept. 26-Oct. 5 to Dec. 5-14.

METAL MARKETS

Incidental to the rearrangement of the steel market's price structure, a step made necessary by the elimination of the "Pittsburgh plus" basis, the leading interest's sheet-rolling subsidiary has announced a cut of \$3 a ton in the Pittsburgh price of full-finished automobile sheets, making the quotation 4.60c. as against 4.75c. heretofore in vogue. Newly announced Chicago prices for ordinary sheets indicate a saving of \$3.80 a ton to the buyer compared with the formerly prevalent Pittsburgh base price plus 34c. freight per 100 lb.

The change in the system of steel quotations comes at a time when the market is once more at one of those junctures which have been frequent of late, when there is some doubt as to whether the demand is or is not on the uptrend. Keen disappointment has been voiced in some branches of the steel industry with the amount of business placed in September. The automotive industry, however, has bought about as much as it did during the month preceding.

In fact, some typical lines of automotive specialties, such as strip steel show improvement. On the face of the change from the "Pittsburgh plus" basis to one of f.o.b. actual point of production or f.o.b. consumer's city, it would seem that a roller of full-finished sheets in Buffalo would have the advantage over more remotely located competitors in seeking business from a Rochester automotive consumer. The full effect of the change must be in clearer focus, however, before localization of competition can be accepted as a permanent feature of the steel market.

Eventually, it would seem reasonable to expect development of a system of quotations based on the chief consuming markets, so that there will be a uniform Detroit price for automotive steels whether they originate at Gary, Ill., or at New Kensington, Pa. The leading producer is setting the pace in the rearrangement of market quotations, and the largest of the independents is following suit. It remains to be seen how the smaller, independent mills will meet the situation, although at first they will undoubtedly seek the easiest way out, i.e., by falling in line.

Pig Iron.—The market is holding its own amid very light demand. Scrap prices have declined. While buying is of retail proportions, blast furnace interests are not pressing iron for sale.

Aluminum.—From the statement given out by Andrew W. Mellon, Secretary of the Treasury, in which the tariff on aluminum is defended as the only bulwark making possible the continued existence of the American aluminum industry, it is inferred in the trade that, for the present at least, the aluminum price situation will undergo no incisive changes. Relatively little metal is arriving from abroad. Importers have booked some fairly satisfactory forward business, however.

Copper.—The copper market is once more living on hopes. Connecticut fabricators of automotive brass parts have bought fairly large tonnages at 13c., delivered. The red metal's future is entirely dependent upon a quickening of foreign demand.

Tin.—Domestic consuming demand is a shade better. The London market is tired out, and seemingly not yet ready for a bull reaction.

Lead.—Storage battery demand is seasonably normal. Far from being weak, the market is merely easing off following the recent excess of demand over supply.

Calendar

SHOWS

- Oct. 21-27—Transportation Show, Motor Truck Industries, Inc., American Exposition Palace, Chicago.
- Nov. 9-15—New York, Annual Automobile Salon, Commodore Hotel.
- Nov. 10-15—Chicago, Annual Show and Convention of the Automotive Equipment Association, Coliseum.
- Jan. 2-10—New York, National Automobile Show, under the auspices of the National Automobile Chamber of Commerce, Bronx Armory. Open to the public except on Jan. 2 and 3 which are trade days.
- Jan. 23-31—Chicago, National Automobile Show, under the auspices of the National Automobile Chamber of Commerce, Coliseum and First Regiment Armory. Open to the public except

on Jan. 23 and 24 which are trade days.

- Jan. 25-31—Chicago, Annual Automobile Salon.

FOREIGN SHOWS

- Oct. 17-25—London, Annual Passenger Car Show, Olympia.
- Oct. 22-31—Paris, motor trucks, stationary engines, garage tools and machine tools, Grand Palais.
- Nov. 9-19—Buenos Aires, Annual Automobile Show, Pabellon de las Rosas, under the auspices of the Automovil Club Argentino.
- Dec. 1-13—Montevideo, Uruguay—Second Annual Motor Show, under the auspices of the Centro Automovilista del Uruguay, held in buildings of the Asociacion Rural del Uruguay.
- Dec. 5-14—Berlin Automobile Show.

RACES

- Oct. 19—Kansas City.
- Nov. 24—Los Angeles.

CONVENTIONS

- Oct. 15-17—Cleveland, Fall Convention of the Motor and Accessory Manufacturers Association.
- Oct. 16-18—Briarcliff Manor, N. Y., Semi-Annual Meeting of the American Gear Manufacturers Association, Briarcliff Lodge.
- Jan. 5—New York, Convention under the auspices of the National Automobile Dealers Association, Hotel Commodore.
- Jan. 26-29—Chicago, Eighth Annual Convention of the National Automobile Dealers Association, Hotel LaSalle.

S. A. E. MEETINGS

- Oct. 22-24—S. A. E. Production Meeting, Detroit.

- Nov. 18-19—Joint Service Meeting of the S. A. E. with the N. A. C. C. Cleveland, Hotel Winton.

- Nov.—Indiana Section, Talk by H. A. Huebner of the Engineering Experiment Station of Purdue University.

- Dec. 11—Indiana Section, Aviation Development, Major E. L. Hoffman; Superchargers, Dr. F. A. Moss.

- Jan. 15—Indiana Section, Lubrication and Crank Case Dilution, W. S. Sparrow of the U. S. Bureau of Standards.

- Jan. 20-23—S. A. E. Annual Meeting, Detroit.

- Feb.—Indiana Section, Automobile Finishes.

- Mar.—Indiana Section, Developments in Transmission.

- Apr. 9—Indiana Section, Talk by F. E. Hunt, vice-president of the General Motors Research Corp.

SALES CONDITIONS

(Conditions in other cities on pages 618 and 620)

San Francisco

SAN FRANCISCO, Oct. 1.—Retail sales took a marked turn for the better in northern and central California during the last 15 days of September. Dealer stocks are very low, and fall business is not quite up to that of the corresponding period of 1923. The hesitancy incident to the new model season has retarded sales as has the prospect that the coming legislature will increase the tax on gasoline.

Prospects for winter business are as good as they were last year at this time. Merchandising conditions, not only in automobiles but in all lines, are slow to quiet in the larger cities in contrast with those in the smaller towns and the country, but the cities are feeling some approaching improvement. Money is considerably easier in northern California than in the southern part of the State, and the financing of automotive purchases by banks is not difficult in view of the large and high priced crops.

Kansas City

KANSAS CITY, MO., Oct. 1.—Retail sales of passenger cars have been better this September than last year, yet not as large as dealers had hoped and expected. The real relief in the situation is the fact that excesses of car stocks have been cut down, and the dealers are entering the winter handling practically from hand to mouth, ordering cars only as needed. Sale of used cars has been excellent.

One factor toward conservatism, is the disclosure that motor car credits have not yet materially improved. Farmers have not paid their own accounts in full to merchants, in all cases;

car buyers have not kept up their payments, and car dealers therefore have been short of money to pay their own debts. This situation is expected to improve within the next month or so.

Trucks are moving slightly better, with good prospects for their sale in the next month or so in country districts.

Cleveland

CLEVELAND, Oct. 1.—Sales expectations for September were not fully realized, weather conditions being a deterrent influence and business generally not starting off at the rate that was expected for the first of the fall months.

Dealers report a drop in sales of new and used cars, as compared with August. There was an increase in the demand for closed cars, the sales running, in many instances, 90 per cent closed.

The dealers are reported to be in good shape, as a rule, with respect to their stocks. They have purchased carefully during the year, and with a few exceptions are in good shape to handle 1925 models. A very limited number of dealers are forced to advertise new 1924 models at a reduced price in order to get rid of the stocks.

Birmingham

BIRMINGHAM, ALA., Oct. 1.—Dealer stocks are fairly low. Fall business is slightly better than it was in 1923, making up in a measure for the comparative quiet of the summer season. Closed car demand is showing a decided increase, the tendency being decidedly toward this type.

The used car situation is still very much a problem, although there has been a demand for used cars in the last few weeks.

Denver

DENVER, Oct. 1.—Colorado dealers are carrying average stocks, but look for larger business this fall on account of the increased prosperity in the farming districts. With the largest beet

crop in the history of the State things look favorable for medium priced cars and tractor sales. Building permits in Denver set a new record, mostly for medium cost dwellings, showing good buying power for low priced cars. The general prosperity of the State is ahead of last season.

The used car market is in a slump, owing to the drop in tourist trade and summer visitors, throwing the visitors' cars on the market at any price.

Los Angeles

LOS ANGELES, Oct. 1.—Within the last 10 days a pronounced increase in demand has marked retail sales. Regardless of this change business for September will prove almost 30 per cent less than last year. With many lines the first nine months of this year show a loss of 50 per cent over 1923.

Arrivals from the factories have been so heavy that some of the distributors have resorted to driveaways in order to put the cars in dealers' hands rather than warehouse them.

Locally the closed car demand is growing rapidly, particularly with those lines that do not show much price differences over open models.

The used car market is active but dealers report it seems impossible to reduce their stocks, as trade-ins figure in almost every sale.

Indianapolis

INDIANAPOLIS, Oct. 1.—Retail automobile trade in Indiana is meeting the predictions made during the summer that fall would be better than mid-summer.

Some of the bigger distributors say that the present month will beat the records of August considerably. The country districts particularly are keeping up the better buying pace that began 40 days ago.

Crop conditions in Indiana exceed expectations, for frosts that might harm corn have been very late and some territories have had no frosts.